SPECIAL COTTON NUMBER.

Volume XII.
Number 4.

APRIL 1897.

$2.00 Per Year.
20 Cents per Copy.

TEXTILE WORLD.

With which is Incorporated the

INDUSTRIAL RECORD

The combined subscription of the Textile World and Industrial Record among textile manufacturing establishments is claimed to be larger than any other publication in this country, and comparison is invited.

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GUILD & LORD, Publishers, 620 Atlantic Avenue, Boston, Mass.

Colored Pattern Supplement, opposite page 64

GRANGER FOUNDRY & MACHINE CO.,

PROVIDENCE, R. I.

Bleaching, Dyeing, Drying and Finishing Machinery.

Cotton, Paper and Husk Rolls.

TENTERING MACHINES

With Patent Self-Feeding Clips.

Patent Combination Rolls

—OF—

HUSK AND COTTON.

Calenders, Mangles, Drying Machines, Tentering Machines, Hydraulic Presses, Etc.

—BEETLES—

Short and Long Chain Dyeing, Sizing and Drying Machines.

PATENT

OIL, COMBINED "PLATE and FLAME"

SINGEING MACHINES.

H. W. Butterworth & Sons Co.,

PHILADELPHIA, - PA.

Bleaching, Printing and Dyeing **MACHINERY.**

Tentering Machines

VIBRATORY

STRAIGHT

RETURN

—— FOR ALL KINDS OF ——

TEXTILE FABRICS.

Patent Automatic Clamp, Spring Clamp, Pin Chain.

Special Attention is called to improvements recently made in the **VIBRATORY MACHINES,** namely:

Spur gear driving in place of bevel gear (patented).

Crank plate for vibrating in centre of machine with forked rod grasping shaft at two points, giving evenness of motion and saving floor space (patented).

Sectional guides for returning chain, and adjustable bearings, to take up slackness.

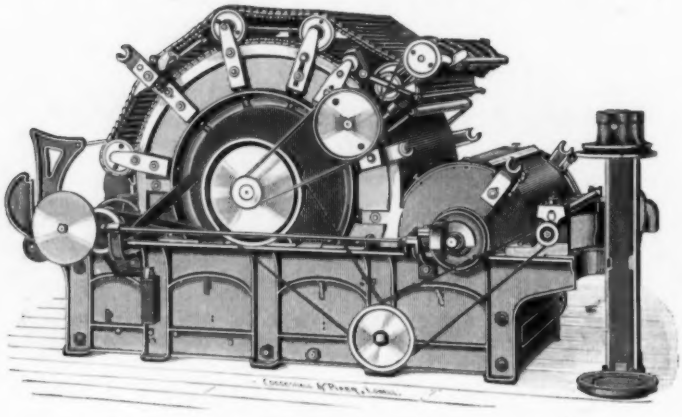
LOWELL MACHINE SHOP,

LOWELL, MASS.,

Builders of

Cotton Machinery

OF EVERY DESCRIPTION.



Revolving Flat Cards, Railway Heads,
Ring Spinning Frames, Fly Frames,
Drawing Frames, Spoolers, Warpers,
Slashers, Looms.

Complete Equipment for Cotton Mills.

ILLUSTRATED CATALOGUES SENT ON APPLICATION.

The late George Draper

once made a remark
to the following effect:—

"THERE IS
nothing so bad but that
some fool will praise it, and
nothing so good but that
some fool will condemn it."

The Northrop Loom

Has now reached a stage where condemnation brings the latter end of our quotation to mind. : : : :

We have no fault to find on the whole, but we know of many instances where mills who cannot help but realize the advantages of our loom, still pursue the fatal policy of delay.

Hesitation in the face of facts is not only unwise but in the present case expensive. A mill buying these looms when we were first ready to take orders would have the extra cost well near annihilated by this time.

The following list shows a few of those who were prompt to decide:

Queen City	Pelzer	Chicopee
Pacific	Lockhart	Tremont & Suffolk
Merrimack	Gaffney	Amoskeag
Tucapau	Wilmington	Henrietta
Lawrence	Mass. Cotton	Spartan
Grosvenor Dale	Lancaster	Whitney
Social	Aurora	Steele's Mills
Cocheco	Newmarket	Abbeville

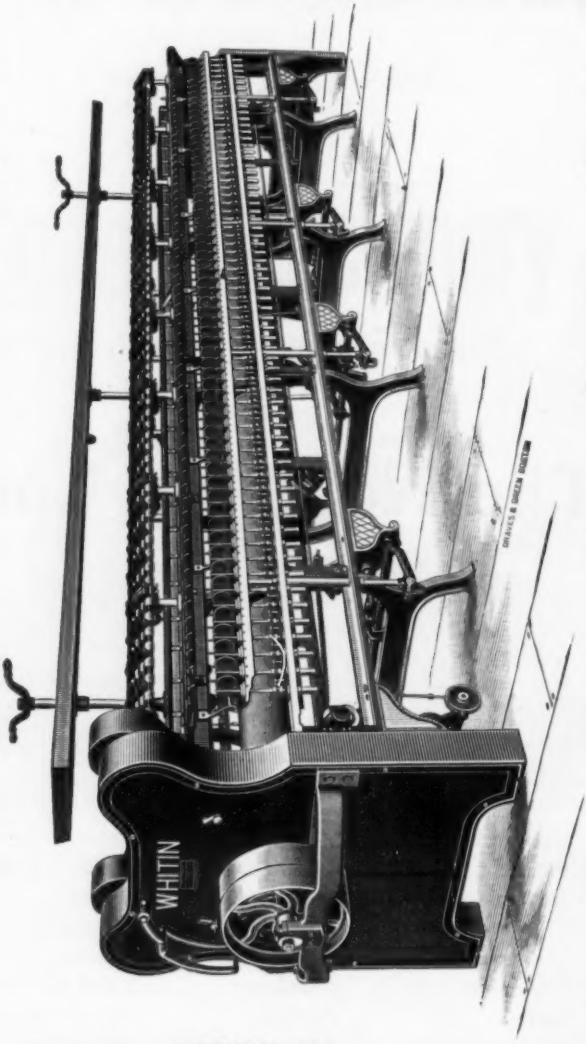
Draper Company,

HOPEDALE, MASS.

The Whitin Machine Works,

Revolving Flat Carding Engines,
Long Chain Quilling Machines,
Wet and Dry Twisters,
Looms,

Railway Heads,
Drawing Frames,
Reels,
Spoolers.



The New Whitin Ring Spinning Frame.

BUILDERS OF

COTTON MACHINERY,

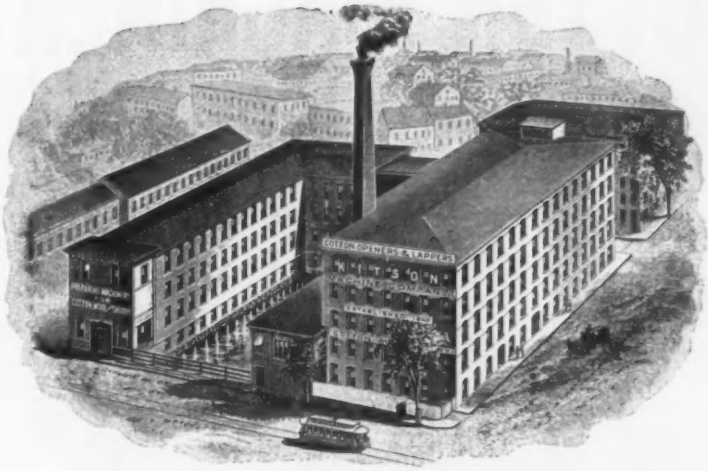
Whitinsville, Mass.

Southern Office: 38 So. Tryon St., Charlotte, N. C.

S. W. CRAMER, Southern Agent.

"Just as Good,"

Won't Do!



Kitson Pickers

are always the

STANDARD FOR COMPARISON.

New Catalogue for 1897 to be had on application to

KITSON MACHINE CO.,

Lowell, Mass.

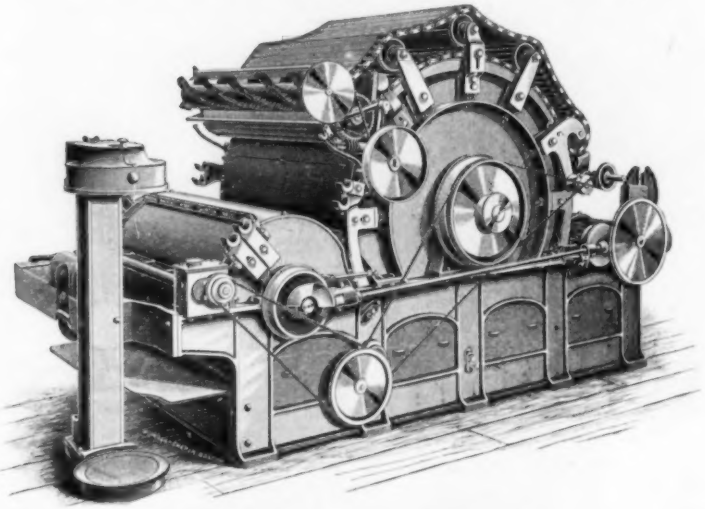
STUART W. CRAMER, Southern Agent,
Charlotte, N. C.

MASON MACHINE WORKS,

TAUNTON, MASS.

COTTON MACHINERY

NEW REVOLVING FLAT CARD.



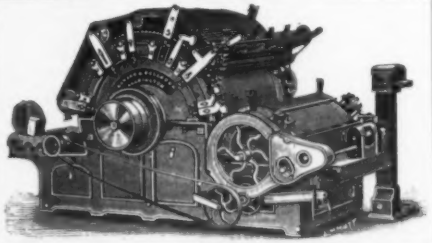
Cards, Railway Heads,

Drawing Frames,

Spinning Frames,

Mules and Looms.

The Celebrated FALL RIVER IRON WORKS CO., one of the largest cotton mill plants in the world, is entirely equipped with our spinning and weaving. It has 262,416 SPINDLES of our PATENT SPINNING FRAMES and 7,469 of our LOOMS.



J. C. POTTER, Pres. HOWARD & BULLOUGH C. E RILEY, Treas.

American Machine Company,

(LIMITED),

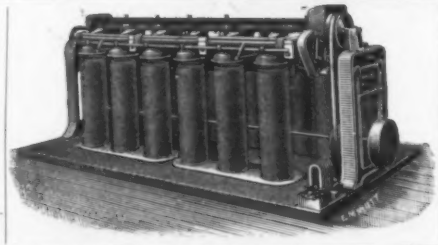
PAWTUCKET, - R. I.

Revolving Flat Cards.

The Simplest and Most Accurate. Greatest Production. Best Quality. Least Waste.

Electric Stop-Motion Drawing.

The quality of the sliver produced cannot be surpassed. Waste, "single" and roller laps are prevented, production increased, and great saving effected.



Bale Breakers, Feeders, Combined Self-Feeding Openers, Breaker and Finisher Lappers,

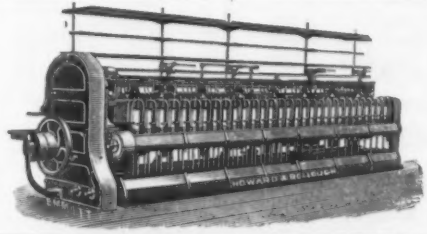
All made from entirely new patterns and containing many valuable patented improvements.

Slubbing, Intermediate, and Roving Machines.

New patented Differential motion, New Arrangement of Cone Drums, New System of Balancing top or bobbin rail, etc.

All parts of above machines are made by special tools and are exact duplicates.

Correspondence Solicited. Send for Descriptive Catalogue.



THE FISHER CARD FEED

for WOOL, SHODDY, and COTTON, is

Second to None

on the market. It holds more stock, requires less space, and needs no "attachments."

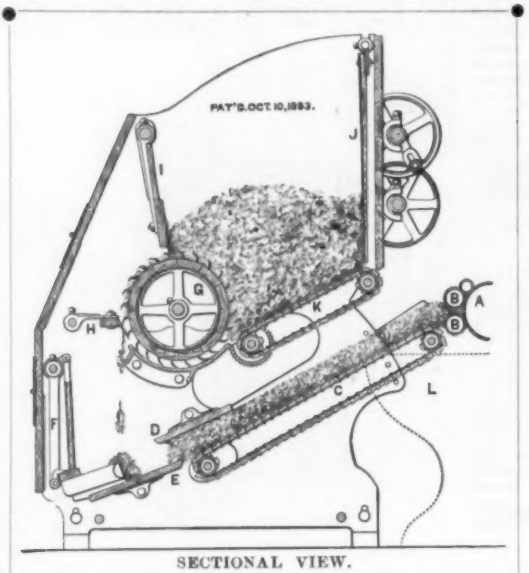
WOONSOCKET, WORSTED MILLS,
Spinners of Worsted Yarns. Mixes and Fast Colors Specialties.
Boston Office, 570 Atlantic Avenue.

WOONSOCKET, R. I., March 4, 1896.

Messrs. Woonsocket Machine and Press Co., City,

GENTLEMEN—In answer to your inquiry of to day as to how we like the FISHER FEEDS would say that, after running one for three months and having put in four more since, is sufficient evidence that we consider the Fisher Feeds the best in the market to-day, and you are at liberty to bring any interested person into our mill to see them running and judge for themselves. Yours truly,

WOONSOCKET WORSTED MILLS,
EDWIN FARNELL, Agent.



SECTIONAL VIEW.

THE FISHER CARD FEED is simple in construction, is strongly built, turns out even work, requires little changing, and feeds the same whether full or nearly empty.

It is built in all sizes and guaranteed as represented.

STAR WORSTED COMPANY,
Worsted Yarns.

C. T. Crocker, Pres. C. B. Smith, Treas.

FITCHBURG, MASS., March 4, 1896.

Woonsocket Machine and Press Co.,

GENTLEMEN—We have the pleasure to inform you that the two FISHER CARD FEEDS are working to our entire satisfaction, giving good results on both long and short wools.

Yours respectfully, STAR WORSTED COMPANY,
A. GARTH, Supt.

(Second order.)

MANUFACTURED BY

Woonsocket Machine and Press Co.,

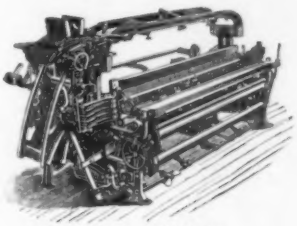
WOONSOCKET, R. I.

CROMPTON & KNOWLES

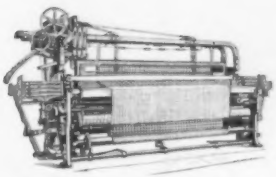
Loom Works,

Builders of every variety of

WEAVING MACHINE,

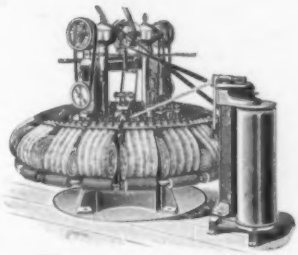


Crompton "1896" Woolen and Worsted Loom.



Knowles Heavy Worsted Loom.

Wool



Combs

Crompton-Noble Comb.

For Combing

COARSE
MEDIUM
FINE

WOOLS.

CROMPTON & KNOWLES LOOM WORKS,

WORCESTER, MASS., U. S. A,

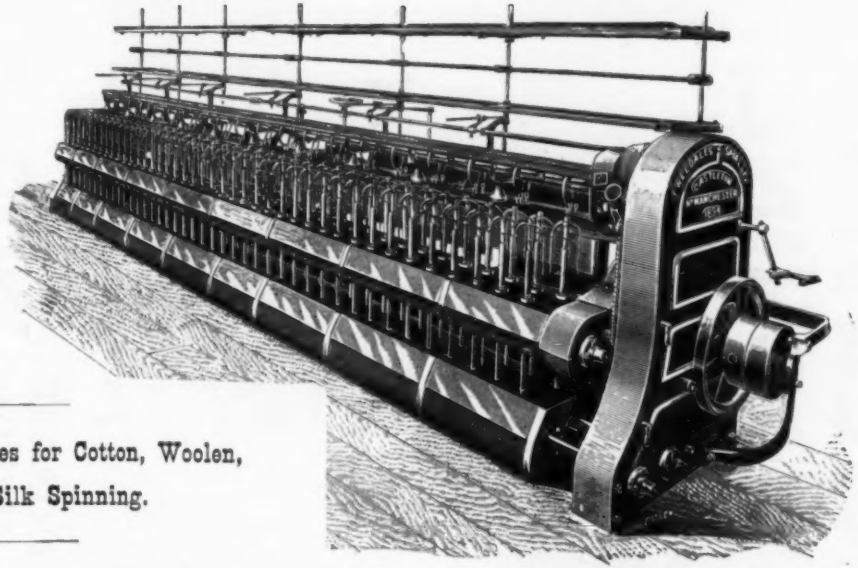
TEXTILE MACHINERY.

McKERROW & BENNETT.

Openers and Pickers.

Revolving Top Flat Cards.

Electric Stop Motion Drawing Frames.



Slubbing Intermediate And Roving Frames.

Self-Acting Mules for Fine Counts.

Spool Thread Machinery.

"Verviers" Paper Tubes for Cotton, Woolen, Worsted and Silk Spinning.

Sole Agents in U. S. and Canada for
TWEEDALES & SMALLEY,
RICHARD THRELFALL,
WILLIAM AYRTON & CO.,
} ENGLAND.

31 State Street,
BOSTON, - - MASS.

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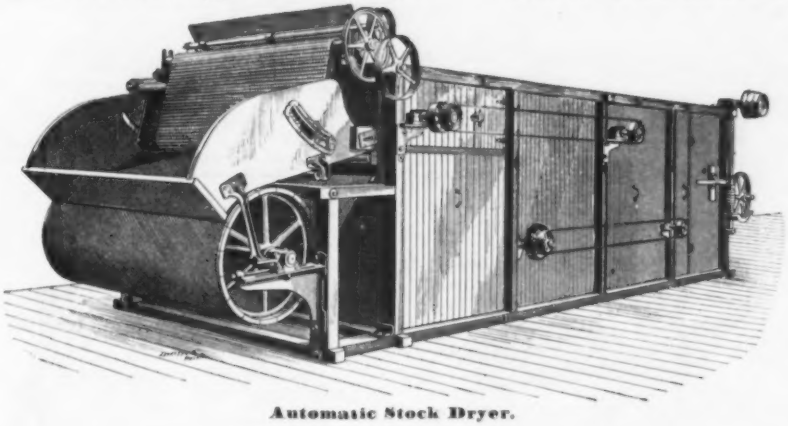
For WOOL, COTTON STOCK, YARN,
UNDERWEAR, STOCKINGS. : :

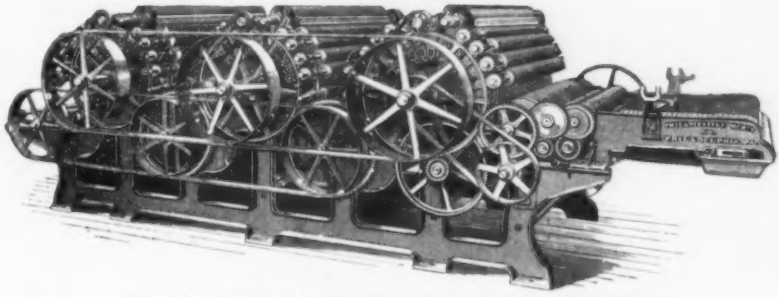
Carbonizing Machines. Yarn Scourers.



Automatic Stock Dryer.

GARNETT MACHINES,

BREASTS, BURRING MACHINES,
FEED ROLLS, LICKERS-IN. : : :



Proctor Improved Double Fancy Garnett Machine.

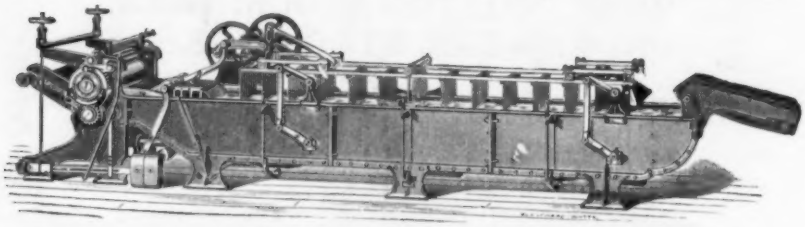
PHILADELPHIA TEXTILE MACHINERY CO.

Hancock and Somerset Sts.,

PHILADELPHIA, - - PA.

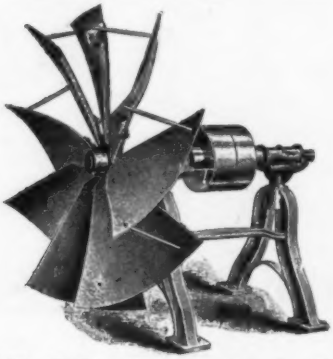
WOOL WASHING,

Preparing and Drying Machinery.

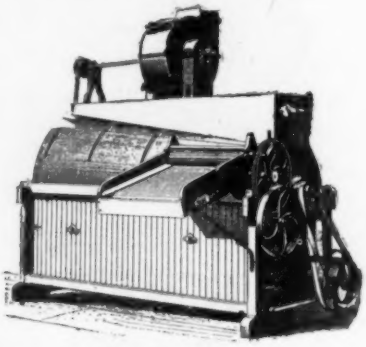


NEW PARALLEL RAKE WOOL WASHER.

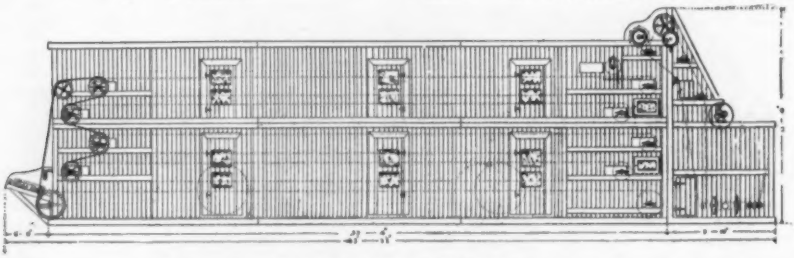
In addition to the above, we are the only builders of **Four Rake and Hydraulic Washers.** We guarantee our machines to be the **Lightest Running** and to require the **Least Repair** of any on the market. **Production and results are second to none.**



$33.00. Best and lowest priced Blower or Suction Fan on the market.



IMPROVED CONE DUSTER.
Exterior View Right-Hand Machine with Fan.



FIVE APRON WOOL DRYER.

We also Manufacture Multiple and Single Apron Dryers, Burr Pickers, Mixing Pickers, Crabbers, Self-feeders for Cotton and Wool; Breasts and Burr Machines for Cards. Wire Cylinders of all kinds repaired and Lickers-in for Cotton Cards a specialty.

C. G. SARGENT'S SONS,

Graniteville, Mass.

COTTON OPENERS AND LAPPERS

Atherton Machine Co. LOWELL MASS.

ELIJAH ASHWORTH,

Inventor and Maker of the Patent Non-Flexible Bend

Revolving Flat Carding Engine.

Patent Flattened Wire Cards; Heat Hardened and Tempered Steel Cards;
"Special Needle-Pointed," "Plough Ground Cards."

Card Clothing of Every Description.

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Makers of **LOOMS** for Plain and Fancy Weaving.

Also Shafting, Hangers, Pulleys and other appurtenances for the TRANSMISSION OF POWER.

FAIRMOUNT MACHINE CO.

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THE LATEST AND BEST

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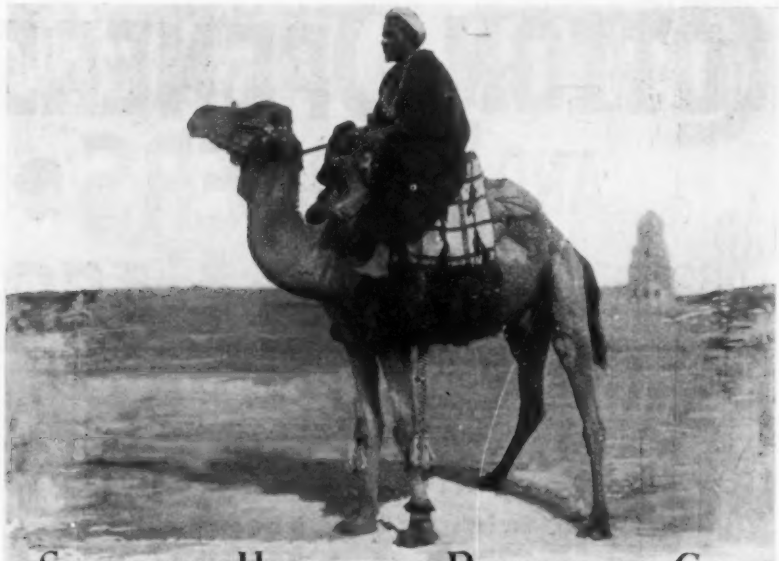
BEAMING SPOOLING WINDING DYEING AND SIZING MACHINERY.

POWER TRANSMITTING MACHINERY.



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Cotton Machinery,
BIDDEFORD, - MAINE.

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REVOLVING FLAT CARDING ENGINES,
"1894" pattern with Patent Flexible Bend with slots for direct setting of the flats to the cylinder by the gauge, and McConnell & Higginson's Patent Grinding Apparatus for grinding the flats from their working surfaces.
Sykes' Hardened and Tempered Plow Ground Polished Steel Wire Card Clothing.
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35 and 36 MASON BUILDING, BOSTON.

EASTON AND BURNHAM MACHINE CO.,
Pawtucket, R.I.
ALL KINDS OF
Spindles
USED IN THE MANUFACTURE OF
COTTON, WOOL & SILK
IMPROVED UPRIGHT SPOOLERS
TO SPOOL FROM COP, SKEIN, OR BOBBIN.

ESTABLISHED 1865.

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Patent Bobbin and Cop Winders,
Spoolers, Beamers, Warp Mills,
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Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups.

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.
No bent stirrup resting on rolls

Manufacturers of all kinds of **Saddles, Stirrups and Levers.** Send for Samples and Prices.

Spinners' Supplies in general.

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REEDS

For Cotton and Woolen Weaving,

LEESE, SECTION AND WARPER REEDS, AND SLASHER COMBS.

Loom Picker Co.,

BIDDEFORD, ME.

(FREIGHT AND TELEGRAPH ADDRESS, SACO, ME.)

MANUFACTURERS OF

Raw Hide and Leather Loom Pickers.
Loom Harnesses and Loom Reeds.
Ticking, Duck and Leather Lug Straps.
Tape Picker Loops, Leather Strapping,
Picker Leather and Hickory Picker Sticks
made of North Carolina Hickory.

Our illustrated catalogue, which contains 199 cuts, and shows the exact sizes of all rawhide and leather loom pickers in common use, will be sent on application. It is the most complete catalogue of its kind ever published.

BIRCH BROS.,

Somerville, Mass.

Mill Sewing Machines.

Sews any fabric, wet or dry, thin or thick, fine stitch or coarse stitch.

SEND FOR CATALOGUE.

Bleaching, Dyeing and Finishing Machinery.

The Dinsmore Manufacturing Co.

CHAS. F. CURWIN, Treas., SALEM, MASS.

Factory Sewing Machines and Supplies.

Special Machines for Cotton Mills, Woolen Mills, Print Works, Bleacheries, etc.

Wilcox & Gibbs' Supplies.

Loopers, Needles, Threads, etc.

UNIVERSAL WINDING COMPANY.

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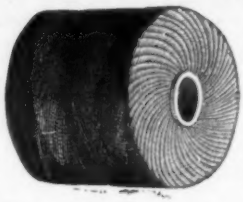

By investigating OUR PROCESS OF WINDING.

HIGHEST AWARD at the World's Fair, Chicago, for new system of winding and also on special machines.

GOLD MEDAL awarded at the Mechanics' Fair Boston, 1895.

In their report the judges say:—"This machine develops an entirely new system of winding, by which threads and twines are prepared in the most compact compass for the market, also shows greater advance in the transfer process than has heretofore been accomplished. This new method of winding subjects the thread to no severe strain, and leaves it in the best condition for use." They also say that they consider the Universal is the greatest single advance shown in any department of our group being *a completed development of a new system*, and thus entitled to the highest award.

F. H. BISHOP, · Manager,

226 Devonshire Street, Boston, Mass.

ANYTHING in Mill Supplies.

Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.
PROVIDENCE, R. I.

STANDARD MILL SUPPLY CO.,

Manufacturers and Dealers in

General Mill Supplies,

Belting, Bobbins, Harnesses, Shuttles, Pickers, Slasher and Clearer Cloths, Ring Travelers, Wire Goods.

ROLL COVERERS' TOOLS and SUPPLIES.

77 Exchange Place. Providence, R. I.

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And PATENTED WIRE DUPE HARNESS,

Dealer in WEAVERS' SUPPLIES.

191 and 193 Berks St., Philadelphia.

WHITINSVILLE SPINNING RING CO.
ESTABLISHED 1873.
WHITINSVILLE, MASS. U.S.A.
OUR PATENTED SPECIALTIES.
DOUBLE RIBBED RINGS U.S. STANDARD. TRAVELER CLEARERS. METALIC BURNISH LIKE THAT PRODUCED BY THE TRAVELER.

GEO. FELL & SON,

LEATHER MANUFACTURERS,

Bolton, England.

SPECIALTY:

ROLLER SKINS

PERSIAN, FOR EGYPTIAN AND SEA ISLAND COTTON YARNS AND FINE COUNTS

WELSH, FOR AMERICAN COTTON YARNS AND COARSE COUNTS.

Cable and Telegraphic Address,

"PELICAN BOLTON"

AI Code Used.

ELLIOT CLOTH FOLDER AND MEASURER

For Cotton and Gingham Mills, Bleacheries, Print Works, Etc.

MANUFACTURED BY

ELLIOT & HALL,

54 1-2 Hermon St., Worcester, Mass. Send for Circular.

STEEL AND BRASS

MAILS.

Liberal discount to Dealers.

J. WALDER, Paterson, N. J.

REEDS, HARNESSES, LINGOES, SHUTTLES AND QUILLS.

SPINDLES

For Cotton, Woolen, Worsted, Silk, and Flax Machinery.

MANUFACTURERS AND REPAIRERS

Also FLYERS, STEEL CAPS, BOLSTERS, STEPS, TUBES, Etc.

WARD & VANDEGRIFT,

Formerly with Bridesburg Mfg. Co.

Elmer, Salem Co., N. J.

WATSON'S HEDDLE FRAMES. WIRE HEDDLES. TEMPERED STEEL WIRE STRIPPER CARDS.

ADDRESS L. S. WATSON MFG. CO., LEICESTER, MASS., FOR THE VERY BEST MADE

GOLD MEDAL

Reeds and Harness,

Manufactured by

J. A. GOWDEY & SON,

P. O. Box 707, - PROVIDENCE, R. I.

P. O. Box 256, - CHICOPEE, MASS.

Send for Price List before purchasing elsewhere.

CHAS. W. GESSLER, Prop.

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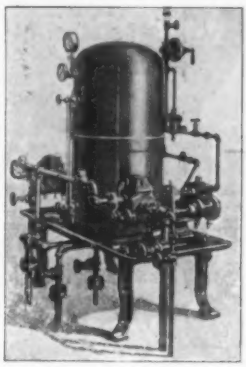

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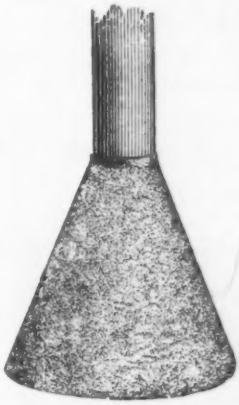

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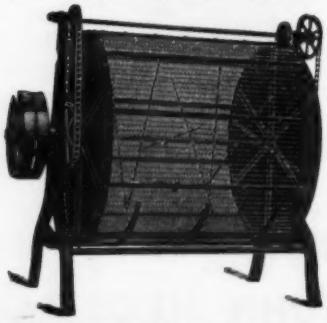

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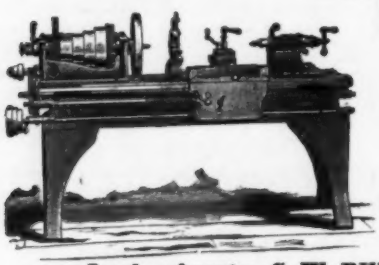

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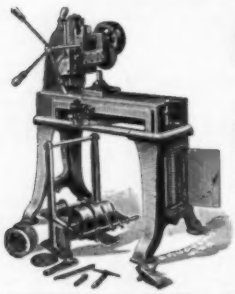

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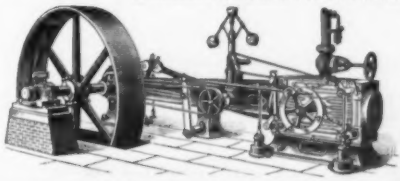

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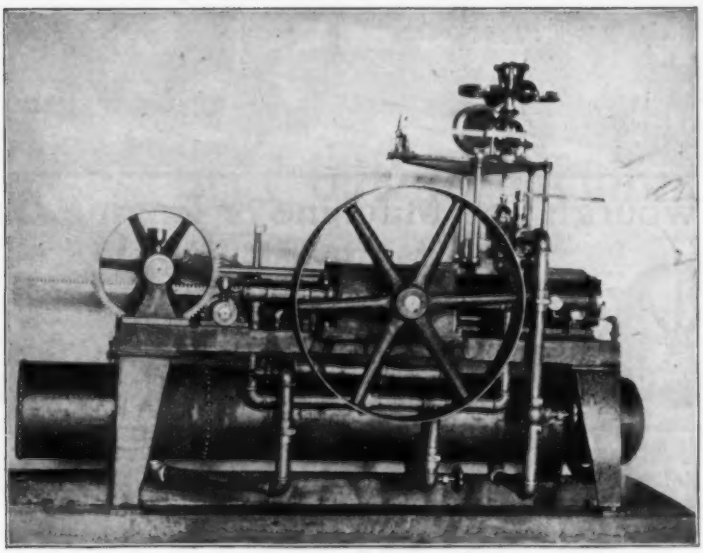

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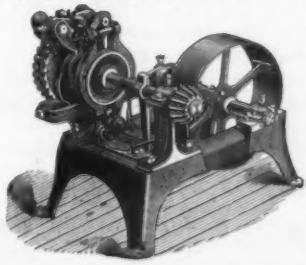

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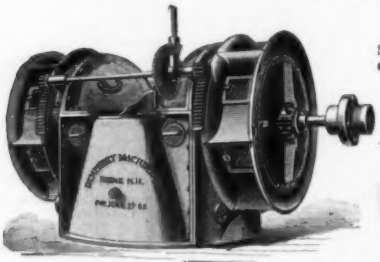

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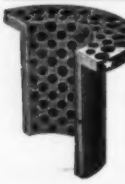

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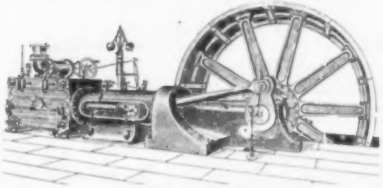

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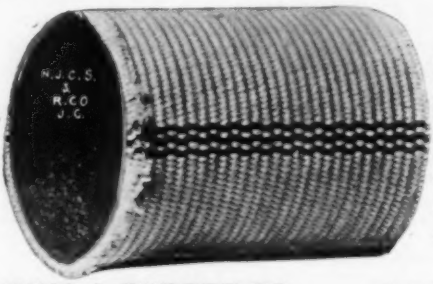

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Loom Brake Mechanism. 578,155. J. T. Meats, Taunton, Mass.

Loom Harness Shifter and Adjuster. 577,994. J. D. Ulrich, Halden, N. J.

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Spindle Thread Holder. 578,810. O. C. Burr, Westvale, Mass.

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Spinning Jenny. 578,494. G. H. Marsh, Paterson, N. J.

Spinning Machine. 578,051. W. E. Allen, Salem, Mass.

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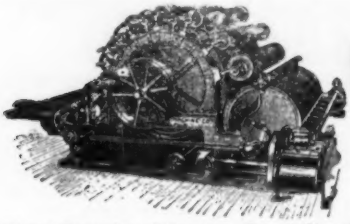
Spooling Machine. 578,140. W. F. Draper and A. E. Rhoades, Hopedale, Mass.

Spooling Machine. 579,489. C. S. Lord, Winooski, Vt.

Straight Knitting Machine. 579,199. C. E. Wakeman, Pontiac, Michigan.



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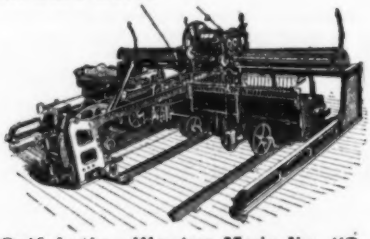

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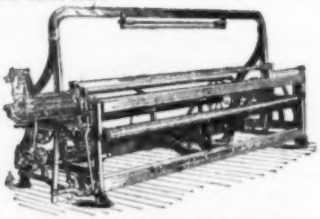

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Woven Fabric. 579,164. T. McAuliffe, Fall River, Mass.

Woven Fabric. 578,742. A. Heald, Phila., Pa.

Woven Fabric and Loom for Weaving same. 579,312. B. Arnold, East Greenwich, R. I.

Woven Pile Fabric. 577,836. W. Brimfield, Blue Anchor, New Jersey.

—To waterproof woolen cloth, dissolve 4 kilos. of caseine in 30 litres of water and 100 grs. of slacked lime, then mix with a solution of 2 kilos. of neutral soap in 24 litres of water, and strain through a fine sieve or cloth. Pad the goods with this solution, dry, pad with a warm solution of acetate of alumina, wash in hot water and dry.

—Chrome Alum, which is sometimes employed for certain colors with alizarine red or blue, requires an addition of tartar and oxalic acid. For deep colors 10 per cent. chrome alum, 4 per cent. tartar, and 2 per cent. oxalic acid are taken.

—Nearly everyone engaged in the cotton goods finishing trade is familiar with the beetling machine, both in its ancient and modern aspects, and there are probably some amongst them who have tried to supplant the machine by other and quicker machinery or methods. The usual method of producing by the beetling machine what is known in the trade as "beetle finish," on the surfaces of cotton and other fabrics, is to place a number of layers of the fabric on a roller, and subject it to the action of "beetle fallers," the fabrics of the cloths by their friction upon each other producing the finish required, the watered appearance being produced by the fibres crossing each other at acute angles. The "beetling" process has also the effect of widening the cloth and otherwise producing a superior surface.

EDWARD W. THOMAS.

TEXTILE WORLD.

Vol. XII. APRIL, 1897. No. 4

EDWARD W. THOMAS.

There are men at the head of the textile manufacturing industries in the New England States, of whom there cannot very well be too much said as to their executive ability and familiarity with the necessities of their business. They have made what there is of New England's leading position as a manufacturing centre in the United States, despite legislation adverse to the industrial interests of this section, as compared with those existing in other competing sections. The City of Lowell has always been noted for the high character of those who have been in authority over the destinies of her manufacturing enterprises. What can be said of the past in this respect, can with equal force, be said of the present. The spirit that animates and controls the undertakings of this city in the production of textile fabrics is to be witnessed in the splendid beginning that has been made in the establishment of a technical school for the improvement of its factory artisans, and for the elevation of its factory system. In this list of active men who have stamped their ability and power of origination upon the textile industries of Lowell is Edward W. Thomas, the subject of this short biographical sketch.

Edward W. Thomas was born in Lowell, Mass., and educated in the public schools of that city. Early in life he evinced an interest in mechanics, became an apprentice at the works of the Lowell Machine Shop, and improved his time, evenings, by the study of mechanical engineering and drawing. Later on, he became draftsman and engineer for this concern. During the latter part of his engagement with them, he was engaged in the construction of mills and reorganizing old ones throughout the country.

In 1880, the Willimantic Linen Company, of Willimantic, Conn., proposed the erection of a mill that was to be a model in its way by having incorporated in it many features not ordinarily met with. Mr. Thomas's services were engaged and he removed to Willimantic, and immediately began the building of the mill. The building was 864 feet in length and 168 feet in width, 1-story in height and designed for 50,000 spindles and necessary machinery for the manufacture of cotton sewing thread. All this machinery, excepting that for picking, was put on one floor and in one room. After the completion of the mill, Mr. Thomas was retained as superintendent of it as well as attending to the mechanical engineering of the company. At the time of the completion of this mill it was considered to be the most modernly equipped mill in the country, containing many novel and ingenious features. During his connection with this company, and his residence in Willimantic, he was engaged as director of the free evening drawing schools maintained by the then treasurer of the company, Col. W. E. Barrows.

In June, 1882, an opportunity offered itself for him to return to Lowell as superintendent of the Tremont & Suffolk Mills, which he accepted, continuing in that position until 1887, when he was appointed agent, and is holding that position at the present time. These mills have, since his connection with them, more than doubled the number of their spindles and looms and their production, and to-day enjoy the reputation of being among the foremost cotton manufacturing establishments in the country, having about 220,000 spindles and 6200 looms, with a production of over half a million pounds of finished goods per week. These mills are entirely on napped or raised fabrics and have more napping machines and facilities than any concern in the world.

Mr. Thomas has visited the manufacturing establishments of England and the continent several times, and strives to keep abreast of the times. He is particularly interested in technical education, and as trustee of the Lowell Textile School has been an indefatigable worker for its establishment and success.

He is at present a director in the Kerr Thread Co., of Fall River, and a director and treasurer of the Shaw Stocking Co., of Lowell; also a member of the American Society of Mechanical Engineers, and member and past-president of the New England Cotton Manufacturers' Association.

He has never held public office except as water commissioner of the city of Lowell, for three years, during which time many improvements and enlargements of the city's water plant were made.

He is connected with many of the fraternal societies and is a 32nd degree Mason.

Notwithstanding his being a very busy man he finds time to meet and put all who call on business in a cordial and pleasant way, and is easily accessible to any of the many work-people employed by him who seek advice and information.

—We note the sales of Fall River mill stocks for the month of March, as follows:

American Linen Co.	$100.
Border City Mfg. Co.	131.
Cornell Mills	120.
Granite Mills	110.
Hargraves Mills	106.
King Philip Mills	102.50
Merchants Mfg. Co.	112.50
Narragansett Mills	104.
Parker Mills	101.50
Richard Borden Mfg. Co.	110.
Sagamore Mfg. Co.	112.
Seaconnet Mills	108.
Stafford Mills	117.
Weetamoe Mills	60.

—It is a source of pride and satisfaction on the part of the textile interests of New England that so able a representative of the industrial economics of this section is to represent the United States as ambassador to Italy, as General Willlam F. Draper, of Hopedale, Mass. General Draper has for a number of years acted as congressman from Massachusetts, and his services in that capacity have been marked and greatly appreciated. General Draper is acknowledged to be the leading expert in this country on spinning machinery, and has written several valuable articles bearing upon this subject.

—Preparations have been made and contracts closed for the operation of the new cotton mill at Anderson, S. C., by electricity, generated by means of water ten miles distant. Many important features will be introduced in the distribution of power in this mill. One of not the least interest will be that of operating spinning frames by electric motors, one being used to each pair of frames.

—Notwithstanding the increasing exportation of textile machinery to the United States from Great Britain, the exports for the first two months of the current year were much less than for a like period in the past two years. The exportations this year, during this period, were but one-quarter of the value for like months last year.

Textile World

WITH WHICH IS INCORPORATED THE

INDUSTRIAL RECORD,

COMBINING

THE AMERICAN TEXTILE, THE DESIGNER AND WEAVER, WARP AND WEFT, THE WOOLEN MANUFACTURER

AND THE

BOSTON TEXTILE.

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THE TEXTILE WORLD'S COMPLETE DIRECTORY OF THE TRADE.

(over 300 pages)

Containing full information about all

COTTON MILLS, WOOLEN MILLS, KNITTING MILLS, SILK MILLS, DYE WORKS, PRINT WORKS, BLEACHERIES.

also lists of

Dry Goods Commission Merchants,
Dealers in Raw Materials,
Manufacturing Clothiers,
Suit and Cloak Makers,
Jobbers and Large Retailers,
Buyers from First Hands.

This Directory is published in the spring in one volume separate from the TEXTILE WORLD. See page 175.

Special quarterly issues are published in January, April, July and October; one (January) being a statistical issue, and the others devoted especially to the cotton, woolen and knitting branches, respectively.

TEXTILE WORLD'S COMPLETE DIRECTORY OF THE MILL TRADE.

In response to many inquiries concerning the TEXTILE WORLD'S Directory, which is described at greater length on page 175, we would say that the book is now "in press," and we expect it will be ready for delivery to subscribers early in May.

We venture to say that never before in the compilation of any trade directory has such thorough system of investigation, both by personal and mail work, been undertaken. The plan of arrangement of our sectional directories, which has commended itself so thoroughly, will be retained; that is, all textile establishments are grouped together under the town in which they are located. This saves a great deal of confusion and bother. There will also be an alphabetical list of all the mills in the country. The textile maps, which were originated and copyrighted by the TEXTILE WORLD, and which have proved such a popular feature in our sectional directories, will be retained. These maps show all the mill towns of any consequence, all railroad connections, distances, etc.

Of special interest to mill men will be new features embracing carefully prepared lists of the dry goods commission merchants in the principal cities, with department managers; also list of dealers in raw materials in the principal cities. The lists of manufacturing clothiers, suit and cloak makers, principal jobbers, large retailers, and other buyers from first hands, will be carefully revised for 1897. These latter features are unique with the TEXTILE WORLD Directory.

A word as to the size of the Directory: The type page will be the same as the TEXTILE WORLD. The finished book, however, will be slightly smaller, and of such size that the flexible cover edition can be slipped into an overcoat pocket. The board bound edition for

office use will be somewhat larger. In answer to inquiries we would state that the price of the TEXTILE WORLD *with* the Directory (flexible covers) remains at two dollars per year; the price of the TEXTILE WORLD without the Directory is two dollars per year; the price of the Directory without the TEXTILE WORLD is two dollars per year.

We have been asked why we are going to this great expense of compiling a complete directory of the trade, when we are not going to *sell* a copy. We have no objections to explaining our reasons. We are certainly not going to this expense without an object. We expect the advertisements to pay a part of the expense, and we also expect to largely increase the subscription list of the TEXTILE WORLD thereby, probably by 3000, judging by present indications. It is all to help the TEXTILE WORLD. It and the Directory go together; the same price, two dollars, buys both.

Containing as it will, the lists of the mills' customers, lists of the mills themselves, and carefully classified index of builders of mill machinery, and dealers in mill supplies, we believe it will be the standard year book for constant reference in every textile establishment in this country.

We shall keep some advertising forms open until the latter part of April, but in order to secure good positions, it is advisable that orders for space should be sent in as early as possible.

THE THREE-COLOR PROCESS.

This magazine is the first textile publication in the world that has given exact facsimiles of woven goods, printed in colors. Our February effort in this direction has been greatly admired, and that which we do in our present issue is a step still further forward. We take pleasure in calling the attention of our readers to our color supplement opposite page 64. The patterns there seen are produced by what is known as the three-color process in photography and printing. At present, this involves considerable expense, which we do not hesitate, however, to incur, believing that our subscribers will thoroughly appreciate our enterprise.

In order to give an idea of what is meant by this process, we will say that its fundamental principle is that which excludes all of the color rays except the one desired from taking or fixing on the sensitive plate in the photographic camera. For instance, the three colors used are the primary colors of the spectrum, viz.: red, blue and yellow. In order to obtain the yellow color, a screen of purple or violet is placed back of the lens in the camera, which excludes all of the other color rays except that of the yellow. In obtaining red color for printing, a green screen is used, and for the blue or orange, a red screen is again used in the same manner. These screens may be either colored glasses or liquid colors. In looking at the copy or an original picture through the violet screen, all of the yellow color is made to appear as black. If a piece of red glass is looked through at the copy, the blue color appears as black; and if a green glass is looked through, the red also appears as black. To photographers and those skilled in the art, it is well known that black is the easiest and best color to fix on to the photographic plate; hence, the object in trying to obtain the colors in black, as mentioned. Only three plates are used in this process, one for each of the three primary colors, red, blue and yellow. These are the only three colors that are used in printing our pattern supplement. The result, as will be observed, is beautiful and artistic.

This process is a comparatively new one in the arts. The idea of color photography has long been in the minds of scientists, but the problem was never solved within the limits of practicability

until quite recently. Experiments in this direction were made as far back as 1841, but it was not until 1891 that an exhibition was made of practical results by the three-color process. The process, as it is now known, is the result of the inventive genius of a Frenchman, Mons. Chassagne, and the researches of Adrien Michel Dansac.

THE DINGLEY TARIFF BILL.

The Dingley tariff bill passed the House of Representatives in exact conformity to the program, on the last day of March. It is now in the hands of the Senate Finance Committee, where its fate is uncertain as to the character of the amendments that surely will be made to it. It would be hazardous, indeed, to predict the changes that will be made by the Senate, or what will be arrived at in the final conference between the two houses. It can scarcely be called a deliberative measure, in its present shape, considering the way it was pushed through the House of Representatives, where only twenty-two pages of the bill out of one hundred and sixty-three pages of the original draft were discussed. It is practically impossible to have measures of this importance receive the deliberate attention of legislators in a body of so many members as are in the lower house of Congress.

Cotton bagging is on the dutiable list, against the wishes of Southern planters, and the cheapest cotton hosiery is subjected to a high division line. Cotton corduroys remain at about 90 per cent. Degras, which is so important in the treatment of leather, becomes subject to a duty. Wool, as is well known, occupies a prominent position as a dutiable article. What will be done with the textile schedules in the Senate, is extremely uncertain. In fact, the action of this body upon any political question, or industrial issue with a political aspect, cannot be foretold. An opinion is strongly expressed in some quarters that the duty on wool will be reduced to about eight cents a pound, but opinions in regard to this are worthless. The past history of tariff legislation has shown that it requires the deliberate handling of the Senate Finance Committee to bring any measure of this kind into an equitable and scientific adjustment.

Of course, of the textile schedules, the one that will receive the greatest consideration will be that relating to wool and woolens. In order that our readers may get a clearer idea of the effect of the tariff on manufactures of wool relating to rovings, yarns, cloth and knit fabrics, we have made out the following tables, which will be readily understood, no doubt, by those at all familiar with the reading of the paragraphs (362 and 364) of the woolen schedule.

Roving, Roping, Yarn.	Compensating duties per pound. Cents.	Protective duties, singles per pound. Cents.	Protective duties, two or more ply, per pound. Cents.
No. 0 to No. 30	27½	15	18
No. 31 to No. 40	33	15.3 to 18	18 3 to 21
No. 41 to No. 50	38½	18.3 to 21	21.3 to 24
No. 51	38½	21.3	26.4

Genapped, bleached, colored, stained, or printed rovings, yarns, etc., a duty of five cents per pound additional to the above.

Genapped yarns, bleached, colored, etc., a further duty of five cents per pound to the above.

Cloths and Knit Goods.	Compensating duties, per pound Cents.	Protective duties.		Protective duties. Ad valorem equivalents.
		Per pound Cents.	Ad valorem.	
1 to 30c. per lb.	33	6	20	40
31 to 40c. per lb.	38½	8	20	45.8 to 40
41 to 50c. per lb.	44	15	20	56 6 to 50
51 to 70c. per lb.	44	21	20	61.2 to 50
71 to 90c. per lb.	44	29	20	60.8 to 50.2
91 to 110c. per lb.	44	37	20	60.1 to 51.8

The protective duties on yarns approximate 40 per cent. ad valorem, and the protective duties on cloths and knit goods approximate 50 per cent. The compensating duties refer to an offset

against the duty imposed upon wool; and though, in a measure, protective, they are not so considered in the make-up of the tariff. The principal advantage in the present construction of these paragraphs is that a safeguard against undervaluation is presented in the specific form of duties, which governs entirely the yarn paragraph, and reduces to a practical minimum the ad valorem duties in the cloth paragraph. Under this arrangement, it can be readily understood that on low cost manufactures the duties are practically prohibitive.

RETROSPECTIVE PROVISIONS OF THE TARIFF.

It seems unnecessary for us at this time to call the attention of our readers to the fact that at the last moment preceding the passage of the Dingley Bill through the House, a final paragraph was attached, to the effect that all articles mentioned in the bill, which shall be imported into the United States between the first of April, 1897, and the date of the passage of the bill, and which were not purchased and directed to be shipped by any citizen prior to April 1st, shall bear the same duties to be charged upon similar articles in the bill. The object of this paragraph was to prevent importations or the flooding of our markets with foreign goods, similar to what took place immediately preceding the passage or operation of the act of 1890. This is the first time that anything of the kind was ever intentionally incorporated in a tariff measure. The nearest approach to it was in the act of 1894, when the date of the bill was August 1, and the date when it became a law, August 28. There is, however, a vital point of difference in these similar provisions, in that the one in the 1894 act was accidental, while the present one is intentional; and this fact should be borne in mind. This incorporation in the Dingley bill was in the nature of a surprise to treasury officials, members of Congress, and the public at large. It was effected mainly through the influence of wool growers, and for their benefit, and was primarily intended to stop the importation of wool. The fact that it is limited to purchases made after April 1st, practically excludes nearly all of the contracts made before the usual spring and summer trade, as such contracts are generally made in the autumn and early winter. Those taking the trouble of reading the language of the paragraph will observe that it is loose in its construction and exposed to different interpretations. It is thought by many that it will be stricken out of the bill by the Senate, and such is our own impression, as its object is apparently to act as a scare to prevent importations, instead of a measure for future enforcement by the government.

A question has been raised as to its constitutionality, presuming it remains and becomes a law. The constitution of the United States especially provides that no ex post facto law shall be passed by Congress, or laws impairing the obligations of contracts. But it has been decided a number of times by the Supreme Court of the United States that these words of the constitution are not to be taken literally, but that they possess a technical meaning, and that ex post facto laws are limited to crimes, and the imposition of forfeitures and penalties. There should not, however, be confusion in the minds of people that an ex post facto law and a retrospective law are synonymous. The constitutional prohibition against impairing the obligation of contracts has been regarded as only applicable to States, and it is a question whether it is not already fairly well settled that the constitution does not prohibit Congress from interfering with the validity of contracts, and that it possesses the power, in certain cases, to pass retrospective laws. The significance of these provisions in our constitution are traceable to Eng-

lish laws and acts of parliament. Should this part of the Dingley bill become a law, cases will unquestionably be brought before the Supreme Court, notwithstanding its previous decisions, under the provisions of the constitution, just mentioned, and one of the most vital points will be the violation of contracts which may be entered into before the bill becomes a law. For example, if wool is purchased abroad at a price delivered at a port in this country, duties paid, according to the law existing, a contract has been entered into, and the question arises, can this be invalidated by a law made subsequent to the transaction?

As long ago as 1798, the Supreme Court of the United States (3 Dallas, 386) decided that the restriction provided in the constitution not to pass any ex post facto law, was to secure the person of the subject from injury or punishment, in consequence of such a law. It was then also decided that while every ex post facto law is retrospective, every retrospective law is not an ex post facto law. The statute, for instance, of pardon, is retrospective and lawful and just. A law is not ex post facto that mollifies the rigor of the criminal law, but those only that create or aggravate the crime or increase the punishment. The 1798 decision was the first one upon this point, and it has held good ever since. It was sustained by the United States Court in 1866, in a case against the State of Missouri, involving the violation of a State statute that applied to an act committed before the statute became a law. The act referred to was that affecting a person's status in the capacity of a priest, because of his past relations with those in rebellion against the United States. This case will be an important one and will be cited, in case this provision in the Dingley Bill should come before the courts; still, the decision in this instance turned simply on the question of whether the act of the person was a crime (4 Wallace, 277). The Supreme Court, in 1834 (8 Peter's 88), interpreted the phrase, ex post facto law, as not applicable to civil law, but to penal and criminal proceedings which imposed penalties or forfeitures.

The constitution provides against three distinct classes of retrospective laws, viz., bills of attainder, ex post facto laws and laws impairing the obligation of contracts. As we have already stated, the ex post facto laws have been construed by the courts as having the English judicial significance, limited to criminal jurisprudence, and that they have no application to civil rights, and that the constitution, in this respect, was for the protection of individual rights of life and liberty against hostile retrospective legislation. This clause, with the other related ones, form the Bill of Rights in the national constitution (107 U. S., 221, and Bancroft's History of the Constitution).

As we have already intimated, we do not believe that this retrospective paragraph of the Dingley Bill will ever be allowed to remain, as it is contrary to American ideas of just legislation.

SOUTHERN COTTON MILLS.

There is a disposition in some quarters, notably one of the leading Boston journals, to cast slurs upon the manufacturing communities of the Southern States. From a recent issue of this Boston publication, the following excerpts are taken:

"It is notorious that labor in the South is carried on under terribly severe conditions, largely because of the ignorance of the wage earners, their incapability of combining, and the deadening effect upon the minds and consciences of their employer of the slave traditions of the past. * * * In the Southern States, child labor is still permitted and encouraged, and this under circumstances almost as trying and as fatal to the mental, moral and physical development of the children

as was the case in the mills and mines of England, two generations ago."

Others might be given. These remarks were suggested by the lack of encouragement which a labor agitator from New England received in his recent efforts in the South, to induce operatives in the cotton mills there to band themselves together into an organization, with special reference to limiting the hours of labor for women and children. This reflection upon Southern mill owners is a disgrace to intelligent journalism, and the foregoing remarks are totally unwarranted by facts. The character of the help in Southern cotton mills is in every respect equal to that existing in the mills of New England. This we can testify to from our own observation, besides that of many others, and of no less a person than A. B. Sanford of Fall River, during his recent trip among the Southern mills, an account of which he has related in the columns of one of the Fall River papers. Mr. Sanford's observation is no isolated case, but corroborative of what many others have noticed. He says: "The operatives are good, native American whites, who very quickly adapt themselves to their work, are quick to learn, happy and contented, and with no disposition to strike or to join labor organizations." His remarks concerning the American whites in Southern mills conform exactly to the conditions that existed in the New England mills when the native population was drawn upon. It was not until the foreign element came into our mills and predominated that labor agitations and strikes became known with more or less frequency. The Southern whites are not incapable of combining, but they readily see that it is not to their interest to do so, to promote reforms after the manner resorted to by labor leaders in the North.

In regard to the employment of child labor in the South, it is undoubtedly a fact that this is resorted to to a larger extent than in the Northern mills, but it is gradually becoming lessened, and in the course of not many years the same conditions that exist in the North will prevail in the South, for moral and sanitary reasons.

Referring again to the testimony of Mr. Sanford in his newspaper article upon the competition of Southern mills with those of New England, it is interesting to note, what has been for some time feared and predicted, that the Southern mills are able, in their equipment and organization, and with their cheaper labor, to compete to good advantage with mills in this section in the manufacture of the fine grades of cotton fabrics. We have an instance in mind, which Mr. Sanford failed to note, of a South Carolina mill that is already spinning yarn for fine fabrics as high as 80's, and with every prospect of success. Mr. Sanford states that on certain fabrics, such as are made in Fall River, New Bedford and Lowell, embracing goods requiring 40's yarn, the Southern manufacturers "are masters of the situation." The mills in that section, as he truthfully says, have decided advantages in the way of hours of labor, which are from sixty-six to seventy-two hours per week; the low cost of labor, which is fully one-third less than in New England; and less State and municipal taxation, an exemption being allowed, as in Alabama, for instance, for a series of years to corporations. Mr. Sanford also enumerates certain other advantages, as cheaper fuel and cheaper cotton, which, however, we consider of minor importance, as we know that the cost of Pocahontas coal, for instance, at Charlotte, is much more than what it is at Fall River or New Bedford, delivered on the wharf. Besides that, the coal obtained from Southern mines has relatively poor steaming qualities. We refer more particularly to the cost of fuel in the Piedmont District, and not that in northern Alabama. The securing of cotton at a less price by Southern mills will be a small factor of advantage in

the course of a short time, according to our views. Mill construction is still against Southern mills, so far as machinery equipment is concerned. On the whole, it costs more to build and equip a Southern than a New England mill, notwithstanding the fact that the materials that go into the buildings themselves cost very much less. The climatic conditions, Mr. Sanford observes, are as good in the manufacturing sections of the South as in the New England States. This, we believe, is generally true, though natural climatic influences are now of almost secondary importance, while artificial means are now so perfect as to regulate these conditions more uniformly and satisfactorily than it is possible under natural conditions. One thing is very certain, which must impress every observer of the manufacturing industries, North and South, that it behooves the legislators of Massachusetts to be more than ordinarily circumspect in regard to the passage of any measures affecting the manufacturing interests of this commonwealth.

CONTROVERSY OVER THE ALIZARINE SCHEDULE.

According to the Dingley Bill, Alizarine, natural or artificial, and dyes derived from Alizarine or Anthracine, including Naphthazurine black, are placed upon the free list, while coal tar dyes or colors are subject to 35 per cent. ad valorem. All of these are coal tar colors, but a distinction has been made between Alizarine and other coal tar colors in our several tariffs, by placing the former upon the free list. The Dingley Bill, however, places, eo nomine, on the free list with the Alizarine dyes, Naphthazurine black. This fact has occasioned considerable disturbance in the aniline dye trade, and protests have been made against placing this dye upon the free list, it being asserted that it is not an Alizarine dye or anyway allied to it, but rather that it is derivative of naphthalene. Those interested have already prepared their case for the Senate Finance Committee, affirming that as Naphthazurine is not a direct or allied product to Alizarine, it should be treated the same as other coal tar colors and subject to the same duty. We do not feel qualified to express an opinion based upon a technical knowledge of the case, but we have in our possession a number of letters from well known chemists, testifying that this dye has no relation whatever to Alizarine or Anthracine, but is a product of Naphthalene, as above stated. The Oil, Paint and Drug Reporter of New York, in a recent issue, presented at considerable length the arguments of those in favor of the duty. It is a question in which manufacturers are necessarily much interested, and we presume that they will have something to say in regard to it before the Senate Committee. That the matter is one of some moment from a revenue standpoint, is shown by the statement that if placed upon the dutiable list, an additional revenue of $500,000 might be expected.

TEXTILE MACHINERY TO THE SOUTH.

A report has been current in many of our exchanges to the effect that "the movement of cotton mill machinery from almost every manufacturing centre of New England is taking on the proportions of a phenomenon, and instead of their being any indications of a lessening of the demand, it is increasing." Among the localities mentioned as being especially benefited by these heavy orders from the Southern section are Worcester, Lowell, Newton Upper Falls, Pawtucket, Providence and Biddeford. These reports are not sustained by the statistics of the transportation companies which would handle all freight of this kind. As a matter of fact, there is much less textile machinery being sent into the Southern States, at this time, than last year or the year before. The monthly shipments of such freight for

the last quarter were much less than the average during the year 1896, and instead of showing an increase, there is a showing of a decided decrease. It may be stated, however, that one of the transportation lines has received more freight of this kind for the last quarter than for any similar period in 1896. But taking the aggregate shipments, they are much less. In 1896, the average of all-rail shipments of textile machinery from the New England States, southward, was about 250 carloads per month, while for the quarter ending March 31, 1897, the average was only 175 to 200 carloads. Very little of this class of freight goes by water, either domestic or foreign, and, in 1896, not more than an equivalent of 100 carloads were thus sent. The prospects, however, for 1897 are good for increased shipments of textile, mostly cotton, machinery to the South, in order to supply the new mills that are now being erected, or the additional requirements of those already established. For instance, the new cotton mill at Cordova, Alabama, (65,000 spindles,) will call for its machinery in the course of the year, and also the additional machinery contracted for (25,000 spindles) by the J. P. King Manufacturing Company, Augusta, Ga., besides the Anderson (S. C.) Mill, now in process of erection.

Printed Mock Lenos, Lenos and Lappets.

[See Colored Supplement opposite page 64.]

Although mock lenos have had quite a sale during the past season, it is the opinion of many in the trade that this class of fabrics will obtain as ready a sale in the next season.

In the colored pattern sheet, sample 1 is an example of this fabric. It is a stripe, mock leno effect, and is a fair sample of the width of stripe which is desirable. The cloth is a fine one, being 90x90, but in courser yarns the leno effect would appear more open, which, as this is the effect desired, is decidedly to the advantage of the coarser yarn fabric.

Samples 2 and 3 are real leno stripes, and the leno weave used is the simplest. No. 2 is a 64x64 cloth, and the open work is produced by leaving a dent in the reed empty.

No. 3 is an exceedingly fine warp cloth, being 128x44. This stripe design is exactly the same width as the plain cloth, and the variation of the pattern can be produced by widening or narrowing the width of the leno in alternate stripes.

Sample 4 is a swivel pattern, and on account of the few mills capable of producing this character of goods, it will always bring a fair price, and represent a larger percentage of profit than those lines where the competition is particularly active, which is the case in mock lenos.

Samples 5 and 6 are printed swivel effects, or what are called Swiss muslins.

Sample 5 is a 64x52 cloth, and 6 is 64x44.

Samples 7 and 8 are grass linen patterns. These are becoming very popular, and will be in demand in stripes, plaid, open work effects and lappets.

Sample 7 is an open work stripe effect, and the stripe is made more striking and attractive by the use of a silk figuring warp. It is a 54x56 cloth.

Sample 8 is a lappet pattern on a 52x48 cloth. This is reeded two ends in a dent, and by the use of various colors in the swivel, new and beautiful effects can be produced.

Style Suggestions for Woolen Manufacturers.

It is always of interest to manufacturers to know what their competitors are making and the prices of the fabrics made. The following will give an excellent general idea of the character and quality of the leading makes on the market.

It will be noticed that there is a

large number of worsted cheviots, and these fabrics have been the predominating ones. But while they will still sell in light weights, and will be excellent ones to make, the browns should be avoided, as also the hairy finish so largely seen in this season's goods. In these fabrics, the finest line shown in the market was that of Oelbermann, Dommerich & Co., made by James Phillip, Jr., and sold under the "Beoli" ticket. The prices of this line are $1.50 and $1.62 1-2, and it is said that in lustrous effect the line at the less price is ahead of that at the higher. But both are at the top in this class of goods. Another fabric which comes in the same class as the above, is that sold under the "Shannon" ticket, by F. Victor & Achelis, at $1.50.

The "Sterling" worsted cheviots sold by Jacob Wendell & Co. are $1.37 1-2. The "Oneida" worsted cheviots made by Fletcher, are sold by Hinck, Busse & Evans at $1.32 1-2. The fabric made by Farwell brings $1.27 1-2. The "Eddingtons" are another line at $1.35 less 5 per cent. A fabric called "Dunns" brings $1.50.

The "Glens Falls" line, sold by Hinck, Busse & Evans, bring $1.25, as are also the "Vikings," a lustrous fabric, sold by Stockton & Drowne, and made by Singleton. The "Oswego" worsted cheviots are $1.37 1-2, and the "Savoys," sold by H. Bauendahl & Co., are $1.15; the "Londonderrys," $1.12-1-2; the "Schaghticokes," $1.20, and the "Schwagers," $1.05. In point of number of lines, probably the next fabric is the cheap cheviot fabric, the prices of a number of lines having been given previously. The "Cawnaults" are 85 cents, $1.00 and $1.25, all less 5 per cent. and 5 per cent. These are made largely of "kempy" stock. The "Daytons," in this same class of wool cheviots, are 90 cents, and a line sold by Stockton & Drowne, in large plaids, are 95 cents; the "Champions," made of "kemp" stock, are 70 cents. The "Casters," in dark colored mixes and carrying some shoddy, are 75 cents; the "Norwalks" are 85 cents, and a close finish effect sold under name of "Syndicate," in basket mixes, is 85 cents. The "Clearmont," a close finish cassimere, sold by Stevens, Sanford & Handy, are $1.00. The wool cheviots of the Chester Woolen Co. are $1.00 and $1.25, both less 5 and 5 per cent.

In cheap fabrics, the cloth which created the greatest sensation is that of a worsted and wool cheviot, in basket and twill patterns, sold by the Washington Mills for 87 1-2 cents. This line is in fancy colored mixes, the plain black and blue twill cheviots being sold at 90 cents. The mix worsted diagonals, by this same maker, sell for $1.07 1-2, and the black worsted piece dye stripe pantings at $1.25. The old reliable "Dickey" cheviots, made by W. J. Dickey & Sons, sold in plaids and stripes, and small pin checks, at 60 and 63 cents, the last priced fabric being cleaner stock than the 60-cent.

In cassimeres the melton finish goods are largely in the predominance, and in this finish are the "Pelhams," sold at $1.15, by Stevens, Sanford & Handy.

In cheviot cassimere is the "Atlas" line, at $1.12 1-2. Another fabric under this same ticket is $1.35, and consists of twist effects, in fancy patterns and plain whip cord. The "Altons" are a light colored cheviot line at $1.00, and contain some twist.

One of the greatest lines of hair lines on the market are the "Norristowns," sold at $1.20, by H. & W. H. Lewis. The "Swift Rivers," sold by Wendell, Fay & Co., are also $1.20 for hair lines and stripes, while the filling rib patterns in dark grounds with silk are $1.35. The "Vassalboro" cassimeres, sold by Stursberg, Schell & Co., are $1.25 less 5 per cent. Schaghticoke have a fine melton finish cassimere at $1.50 less 5 per cent. The twills made by Jesse Eddy, and sold by Sawyer, Blake & Bramhall, are $1.55. They are also overplaided with a single thread of fancy color. The "Carleton"

cassimeres, sold by F. Vietor & Achelis, are $1.40, and manufactured by the Hartford Woolen Co., of Hartford, Vermont, who also make a line of covert cloths for this same house at $1.50. The greatest line of wool cassimeres are those shown and made by the Oregon City Mfg. Co.; these are in stripes and plaids, at $1.30 and $1.87 1-2. Phillips, Kunhardt & Alley have cheviots at $1.10, $1.12 1-2, $1.25, and $1.37 1-2, which are typical of the character of stuff usually produced by this concern. The fine twist cheviot effects are $1.62 1-2, and the worsted cheviots $2.00. In worsteds, the "Yeovils" are $2.20 less 5 and 5 per cent., and $2.37 1-2. These are a backed fabric with a fine face, as are also the "Shermans" made by Phillips, and sold at $2.00 and $2.25. These are fine stripes and checks, and some light colored twist patterns.

The "Silver Lakes," made by Tillotson, are conceded to be the greatest clothier's line of worsteds in the country, and bring $2.00, $2.10 and $2.25, less 5 per cent. The $2.00, less 5 per cent., grade contain some very fine filling rib-stripes, and also silk-mix patterns. The "Rock" worsteds are $2.62 1-2, and the "Globes" $2.75 to $3.00 and $3.12 1-2, less 5 per cent. and 5 per cent. This line contains some of the fine white stripe on black ground patterns. The "Central" worsteds, made by Farwell, are $1.50 and $1.62 1-2, and the "Universals," made by the same manufacturer, are $1.62 1-2, as are also the "Lincolns." The "Perseverance" worsteds, made by Singleton Bros., in a through and through cloth, are $1.67 1-2, and the "Pall Malls," sold by Jacob Wendell & Co., are $1.95.

Lippitt's worsteds in stripes and suitings are $1.55 and $1.70. The line made by National & Providence Worsted Mills, and sold through Hinck, Busse & Evans, are $1.50. Broad Brook fancy worsteds are $2.00, and a fine fancy back whip cord brings $2.50. The "Norwalk" kerseys are $1.80, less 5 per cent., except blue, which is $1.92 1-4, less 5 per cent. There are other grades at $2.50 and $3.25. Stockton & Drowne sell a kersey made by Harris at $2.37 1-2.

The general effect in all the fancy pattern lines spoken of here are plaids, of every description, and nearly all on the brown shades. As already said, the tendency of the market to run all to one class of effects is about the quickest way to kill that class that could be devised. So it is now, while plaids and brown shades sell, they are losing ground, and will speedily be superseded by stripe effects, which always come into favor after plaids have had a run. This will be the class of styles which will be desirable to make samples of in light weight goods, and the brown shades should, to a great extent, be thrown out entirely, and the gray substituted. These are the coming shades, and the manufacturer who gets these shades right, will be able to do business. In making them, care should be taken that they do not border too much on the blue, but more on the grayish black.

In light weight pantings, the styles in the finest foreign goods are small checks in various styles, in white and black, white and brown, and white and olive. These are in prominent effects, and are made, except as to colors, in neat patterns.

In cassimeres and worsteds, the tendency will be as already described. The sale of cheviots will undoubtedly be small, as this fabric has been largely overdone during the present season.

Among the Dry Goods Trade of New York.

Naturally the dry goods trade feels much pleased at President McKinley's selection of Cornelius N. Bliss for secretary of the interior. Mr. Bliss, as is generally known, is the senior member

of the great commission house of Bliss, Fabyan & Co., and has no end of outside financial connections.

The biggest dry goods deal in months was the sale of the business of the Henry Offerman's estate, on Fulton St., Brooklyn, ten days ago. About a million dollars were involved. A Chicago syndicate has taken a ten-year lease of the Offerman quarters. The jokes of the funny papers that New York's dry goods business is wholly in the hands of the windy and Quaker cities, are now even truer than before.

A. M. Warner, of A. M. Warner & Co., dry goods importers, of 52 White St., died last week, after nine months' illness. He was also interested in the Warner Co., manufacturers of upholstery, etc.

An experiment which is being watched with much interest is that instituted by R. H. Macy & Co. and Abraham & Straus, of Brooklyn, who have opened a joint buying office in the Silk Exchange Building. The idea is to buy together certain lines of goods in great quantities. The general small buying of both concerns will be conducted as heretofore.

Ambrose Wood, the Franklin Street importer, died two weeks ago, after an illness of several weeks. His brother is James Wood, the great manufacturer of Bradford, Eng.

John H. Anderson has taken the place of the late David Rankin with Tefft, Weller & Co. The late Mr. Rankin was better known as "Judge." For 20 years he had been with Tefft, Weller & Co., particularly looking out for the trade of Tennessee, North Carolina and Virginia.

A veteran tradesman says that barring importations which are less free, business is almost a counterpart of the corresponding period of last year.

Morris Emanuel, for 15 years with A. Steinheardt & Bro., is dead, after a long illness. He was the firm's credit man.

A new fabric is being shown in cotton and silk, to which no name has apparently been given. The silk is scattered irregularly, with narrow black and white stripes for a background. As the designs are capable of endless modification, and the cost is low, their sale is expected to be large.

Edward Lazonby, of Lazonby & Cartwright, the Leonard Street white goods dealers, died recently, after a brief illness. He was born in Manchester, Eng. He was formerly with A. T. Stewart & Co., E. S. Jaffray & Co. and Whitman, Creighton & Co.

Canvas cloths with colored checks in leno weave are among the new offerings. This weave imparts a semi-open effect.

Wm. H. Van Slyck, who lived in New York as buying partner of Finch, Van Slyck, Young & Co., of St. Paul, died last week. He had long been in failing health.

Some tweeds that are shown are made up on the bias, saving the necessity of cutting the cloth that way. A premium is fast being placed on laziness.

Of all colors, white is easily the leader this spring, followed by bright shades of almost every variety.

A fancy effect is being lent to the etamines, for spring trade, by using vigoreaux yarns, which gives an illuminated canvas, as it were.

There is a French novelty of silk, mohair and wool, woven in regular pattern in several colors. It seems to be nameless.

There is a hand-spun cotton wash fabric that promises to become popular for bicycle suitings.

Crispene is a new washable material partly made of cotton. It comes in several colors and effects, which are of the silky order.

Lappel stripes and effects are much "in the swim" this season, which expression is especially appropriate, inasmuch as they come on wash goods.

Mayor William L. Strong's 70th birthday anniversary is easily worth a

paragraph. But for the gout he would be as frisky as a school boy. As it is, he is only slightly gray and looks as young as most men at 50. He is the first mayor of New York to reach three score and ten in office. His Honor has a fetching personality. He said on this anniversary: "No one who has ever occupied the office of mayor has had so much fun out of it as I. When my term expires I'll go down in the dry goods district again, among the boys, and get in harness." It is just this spirit of boyishness that makes Strong so magnetic. Long life to him.

Chas. Sampson, of O. H. Sampson & Co., Boston, was a recent visitor in this market.

John A. O'Connor, resident buyer at 54 Lispenard St., has added Douglass, Thomas & Davidson to his list.

Levy & Kronik, of Grand St., have moved to 356 Canal St.

The Syracuse (N. Y.) Dry Goods Co. has appointed Percy Biggs resident buyer.

Chas. A. Choate, long with Tefft, Weller & Co., will conduct a lining department with M. Weil & Son, of 398 Broadway.

Chas. A. Smith, of 256 Church St., has been appointed resident buyer for W. R. Moore & Co., of Memphis.

John J. Murphy, for 16 years with Tefft, Weller & Co., died recently at Colorado Springs.

The firm of Jones & Co., composed of Joseph and Alice M. Jones, of 377 Broadway and 84 Walker St., has assigned with few preferences.

Joseph & Werner, importers and commission merchants, have moved from Leonard St. to 43 and 45 White St.

H. G. White, resident buyer, will soon move from West Broadway to the Rothschild building, on Leonard St.

The Dry Goods League has leased the top floor of the new building 493 Broadway, and will fit up club quarters.

Wm. Davies, 51 Lispenard St., has added the Straus-Hecht Dry Goods Co., of Danville, Ill., to his buying slate.

Edwin A. Bergan, for more than a dozen years one of Lee, Tweedy & Co.'s buyers, died last week of pneumonia.

Henry W. Wilde will hereafter manage the New York office of Wm. Wood & Co., of Philadelphia. He has for six years represented Messrs. Wood & Co., at Chicago.

Wm. H. Theobald, dealer in dress goods, at 721 Broadway, has assigned to Warren W. Foster, with $6530 in preferences.

Wm. E. Colt, formerly one of Horace B. Claflin's partners, is dead.

Another of Mr. Claflin's former associates, Henry Stone, is dead. It was Mr. Stone's uncle, Wm. F. Bulkley, who laid the foundation of Claflin's business.

The spool cotton manufacturers recently held a luncheon to discuss the depression in their line. After the meeting one of their number told a reporter that "The outlook is exceedingly promising."

Elias Joseph, of Joseph & Werner, died a few days ago of heart failure. He was formerly a member of the firm of Hahlo & Stieglitz, and later in the concern of Ballin, Joseph & Co.

Jas. H. Fitzsimmons, of the Castle Braid Co., will hereafter handle yarns himself.

Cotton Market.

The cotton market for the last month, up to present writing, has been one of inertness, and, therefore, possessed of very little interest to the spinner or speculator, either in this country, or abroad. The current price for spots, Middling Uplands, is 7 5-16 cents per pound, and for Middling Gulf, 7 9-16 cents. The chief disturbing factor in the market has been the threatening attitude of the Eastern question, which is but an illustration of the unity of commercial interests throughout the

world. The effect of it has been seen in the withdrawal for a time, from the markets, of spinners, at home and abroad. The prospects, however, of a peaceful solution of this question has had a quieting effect; still, there is no great vitality apparent and no material change for better or for worse is to be seen. The conditions that have been existing in India, of famine and pestilence, have spent their force, apparently, in any effect they may have upon the trend of the market. An important point of interest at this time of season is that relating to planting and the prospective crop. Advices are still meagre as to the amount of acreage that will be planted, but the intentions of the planters appear to be toward an increase, as larger quantities of fertilizers are reported to have been sold than last year. The effects of the heavy rains in the Mississippi Valley, and the overflow of that river have retarded planting operations and destroyed many of the farming implements of the planters, thus crippling their means of farming to this extent. These overflows, however, have occurred in previous years, and resulted, on the whole, beneficially, rather than otherwise.

The amount of American cotton in sight on the first of the month was 7,904,260 bales, against 6,457,319 bales at the same time last year. A crop is predicated upon these receipts, for the season of 1896-97 of 8,500,000 bales. The Southern mills have in past years generally completed their purchases for the season by the end of January, and their purchases thereafter have been accordingly slight. This season, however, owing to the monetary stringency which prevailed during the autumn, it is thought that they have secured only a relatively small proportion of their necessary supplies and that a more constant demand will be made for the rest of the season than heretofore. The stocks held by Eastern spinners are relatively small. The takings of American mills, North and South, including Canada, for the seven months ending March 31, were 2,155,262 bales, against 2,107,102 bales for the same time during last season. Taken in all of its aspects, the cotton market is in a sound and healthy condition, and, under the circumstances, prices, if they do not harden, are not likely to soften much. They will for the balance of the season be largely influenced by the advices received from time to time as to the preparations being made for the new crop.

The most recent advices from Egypt represent that planting has begun, but is somewhat later than last season, owing to cold weather. News from Peru indicate that the market for Peruvian cotton is in buyers' favor. Freights are high, owing to large shipments of wool and sugar.

Wool Market.

The wool market continues to be one of great activity, not only on account of the operations of manufacturers, but of those of dealers among themselves, the latter being denominated speculative, but due more probably to the desire to replenish stock, in order to meet the demands of their customers. Taking the sales in their aggregate, more wool has passed from one ownership to another in the markets of the United States, during the last quarter, than during a like period in the previous history of the wool trade. Considering the vast amount of wool that has thus changed ownership, the advance in prices has been very slow. The stocks of domestic wool are very low, and much of it is held by Western owners for better prices. Fleeces are particularly scarce, and manufacturers of this class of wool must depend upon the foreign product, which has been bought in large quantities, of late, at the recent London sales. The demand on the part of mills for the current year will be far greater than for any previous year since 1892, some of the New Eng-

land mills already operating their machinery over time. An exception, however, is noticed concerning carpet mills, which are not running on full time, the trade for carpets being much depressed.

Ohio XX fleece brings 22 cents per pound, costing 47 cents clean, and XXX brings 23 cents, at a cost of 49 cents clean, per pound. Michigan X fleece is quoted at 18 cents, and even higher. Staple wools are in a particularly strong position. Territorial wools are greatly sought after, and the stock in hand is small. This wool is estimated to be worth from 35 to 40 cents clean, per pound.

Australian wools are worth about 45 cents clean, per pound, though some of the choice Port Philip wools, capable of spinning 60's and upward, are worth close on to 50 cents a pound.

The last series of London sales came to a close about the first of the month. There was a good attendance throughout, and prices were from 10 to 15 per cent. higher than at the close of the previous sales.

Textile Fibres.

[Lecture of Henry G. Kittredge before the Lowell Textile School, Lowell, Mass., February 24, 1897.]

(Continued from March.)

The native Asiatic wools, so largely used in the manufacture of carpets, approximate hair, as noticed on plate *4*, in the illustrations of East Indian wool. This is the lowest type of wool, found in the western hemisphere in the native Mexican sheep, a descendent of the Spanish Churo.

A fibre very extensively used in the manufacture of textiles, is that taken from the Angora goat and commercially known as mohair. This fibre does not resemble the hair from the common goat in any respect. The latter is much like that from the Cameroon sheep. Mohair (plate *4*) is a beautiful fibre of great lustre, which constitutes its chief value together with its silkness. Its imbrications are poorly defined, even under high microscopic power. Its fibrillæ or cortical texture enters largely into its structure, giving it great tensile strength. Kemp in wool is an ugly fibre to contend with (plate *4*). It is of no value; difficult, if not impossible, to color, no felting properties and obstinate to every requirement of manufacture. Its presence in a fleece of wool greatly depreciates its value, and the fact of its being there indicates defective breeding or degeneration.

All of the animal fibres illustrated in this paper were selected by me or for me from the side of the animals, so as to make comparisons more satisfactory. On plate *5* are to be seen fibres taken

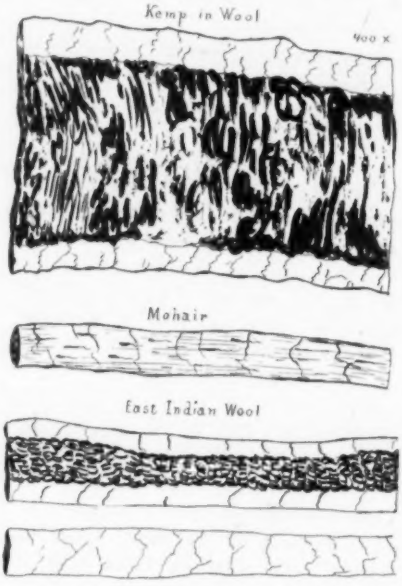


PLATE 4.

from various animals, introduced here to satisfy an inquisitive turn of mind. There is no great structural defect in these unfitting them for textile use, unless there be discovered something of this kind in the otter. It is well known that the fur of the rabbit and the beaver can be and is used in manufacture, either spun into yarn or felted. These fibres could be and would be employed in textile manufactures were they obtainable in commercial quantities at a low enough cost. The rabbit fur is so

obtainable, and from Australasia alone millions of skins are exported anually. An examination of the illustrated fibre, however, will exhibit no structure essentially different from that of the lemur and the lynx. The kangaroo fibre is introduced (plate *5*) as a curiosity, though not intended to be characteristic of this fibre, but to show a form of malformation that sometimes confronts the investigator and throws him off his scent. As will be observed, the medulla changes its form and the scales are attached to, or hug the shaft with more or less closeness. Any fibre of this kind, of course, is useless.

Felting is one of the peculiar properties of wool and all animal fibres that possess sinuosity and marked denticulation of their epithelial scales. By referring to plate *6* the arrangement of wool fibres will be observed when brought into close contact by felting. The illustration of two woolen threads was taken from a piece of compactly felted beaver cloth. The threads were firmly united, still, when placed under the microscope, the spaces between the fibres appear many and of considerable size. The same is to seen in the illustration of a very compact piece of felt. As has already been said, felting is the combined result of sinuosity, or crimp, and serration. The latter has been shown. The crimp is to be seen on plate *6*—that of Lincoln and Merino wools. There is sufficient crimp and serration to the Lincoln wool to make it felt, but there is not enough of this to make it felt well, or anywhere near what the Merino wool is capable of. The latter is rich in felting properties.

The question may be asked, why is it Merino wool crimps, while some other varieties of wool do not? Curliness, as has been said, is due to flatness of the fibre, but crimp does not depend upon this formation. Turning to plate *7* and there will be seen a section of a Merino sheep's skin and one of the human skin. These sectional views are more or less diagramatic, but truthful. That of the sheep's skin is after a representative drawing made by Nathusius Königsborn, but strictly consistent with sectional views in my microscopic cabinet which I should gladly show to any interested person. As a true sectional cut on a line with the hair follicles cannot be made, and as an exact illustration of one might be confusing, I have adopted an ideal one. The anatomical conditions attending the growth of hair and wool are the same. Each has a root and shaft and has to do with a papilla, a follicle and sebaceous

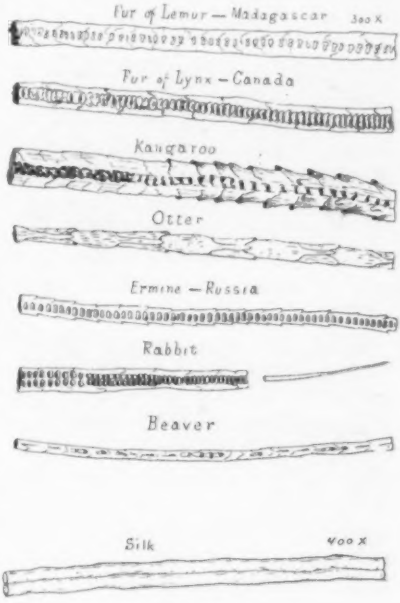


PLATE 5.

glands. But in the illustrations before us, the passage of the wool fibre through the skin is undulatory, corresponding to the shape of the follicle, while that of the hair is straight. The consequence seems to be obvious, in that the wool fibre is wavy or crimpy, and the hair straight. Whether this be the real cause of the crimp in the Merino wool I must leave without argument, as time will not allow of it. It certainly is plausible.

Before leaving plate *7*, I will direct a moment's attention to some broken

fibres of wool and cotton, to show their almost indestructable nature from mechanical and to some extent from chemical causes. At one time, I fed some larvæ of the wool moth upon some Asiatic wool, and one of them I put through the usual caustic potash, water, alcohol and turpentine process preparatory to mounting in Canada balsam for microscopic observation. The larva had not fully digested its food, and what was left is pictured before us, greatly magnified, of course, broken or torn into short pieces in the act of eating, but still wool in the alimentary canal of

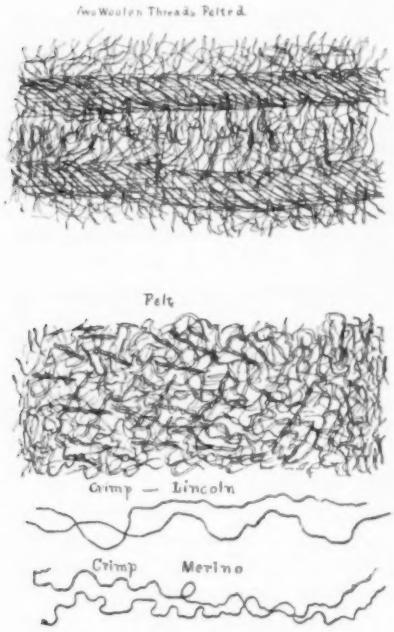


PLATE 6.

the grub. The broken fibres of cotton are the dust, so to speak, from wool and cotton mixed goods, rags, that had been subjected to a sulphuric acid treatment and been dried—carbonized, so called. The fibres show partially chemical destruction, but, notwithstanding its severity, the fibres retained enough of their nature to be distinguishable. This is a favorable specimen, however. It is hard to kill a wool or a cotton fibre.

We have in plate 8* several examples of the cotton fibre—the immature and the ripe. The immature fibres were prepared for microscopic examination within four days after the capsule was picked from the plant. The capsule was so protected as to prevent all chance of its losing its natural moisture to any appreciable extent, in course of transit from the South. The cotton fibre, in its very early immature state, is without twist; simply an extremely thin, flat, ribbon-like filament, requiring great care in handling for scientific investigation. The lack of care, oftentimes, brings the investigator to wrong conclusions.

It is difficult to say when the cotton fibre takes the twisted form. This form, however, is certainly present, to a limited extent, a week or more before the capsule bursts. The ribbon-like condition is retained all through its growth to near maturity, and does not part with its peculiar transparency, fully, till it reaches its inspissated state. A cotton fibre is very seldom round; it is more or less flat, and it is because it is approximately flat that it can take upon itself a spiral form, which, in a measure, gives to it its great spinning value. The ripe cotton before us is typical as exhibiting good to poor fibres. In the two American upland specimens—Gossypium hirsutum—the fibre most in view has most excellent points for the manufacturer's use. That is, it possesses the elements of strength and elasticity, and power of adhesion. These qualities can be seen and are impressive. It requires no dynamometer or other means to demonstrate the existence of these attributes. The other upland fibre is not bad though inferior. The 'Peruvian fibre is relatively finer than is usually met with in this class of cotton. It belongs to the Gossypium Peruvianum species, the so-called "rough" variety which is so much prized for mixing with wool. This particular fibre has some good qualities for the spinner. The poorest

*To appear in the May issue.

cotton fibre on the plate is the Japanese—Gossypium herbaceum. A poor fibre of this variety has been purposely exhibited, so as to impress upon you the fact that, taken altogether, this kind of cotton is the most deficient of any grown in the world. This species is indigenous to Southern Asiatic countries, and though excellent specimens are to be found, as a rule it is quite inferior, aside from its comparatively short staple. Cotton like that represented in the upland variety is sought by the manufacturer, and its character is roughly determined by him, without

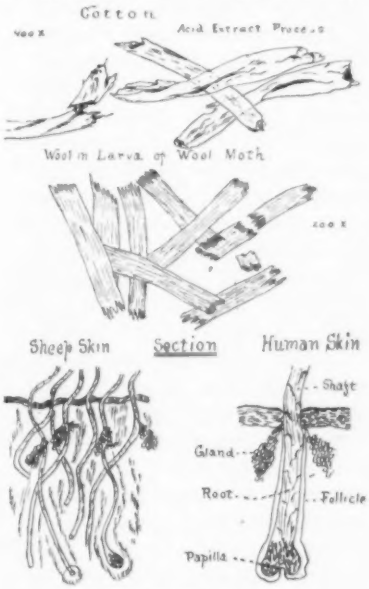


PLATE 7.

the aid of the microscope, by taking a small portion of it in his hands and pulling it apart. Its crackling sound tells him that he holds a well-developed cotton. The cause of this is in the convolutions of the fibres which make them cling together. Some cotton buyers have an antiquated notion that this is an indication of a beard on the fibre, something similar to that on wool, but nothing of the kind exists.

Cotton and many other vegetable fibres have still their mysteries. Cotton fibres at different stages of dissolution are exhibited on plate *9*, under the influence of an ammonical solution of oxide of copper, known in the laboratory as Schweitzer's solution. This is the only known liquid in which cellulose dissolves without undergoing a chemical change, and its peculiar action on cotton is something of very recent discovery and publicity. Charles O'Neil, an English chemist of repute, was attracted to the action of this solution upon the cotton fibre 34 years ago, but his inferences were disputed or held in doubt for many years, or till 1883, when so excellent an authority with the use of the microscope, as John Butterworth, of Shaw, England, confirmed the correctness of Mr. O'Neil's observations, which are diagrammatized at "O" and "O O" (plate *9*). The results of Mr. Butterworth's experiments inspired me to try them, and I was happily successful, as all of you can be, if your methods are correct; only the phenomenon at *C* is something I have never been able to get, owing, possibly, to not using strong enough magnifying power. The longitudinal striæ, as seen in figure O, and evolved at *A*, can be seen while the fibre is undergoing its transformation, but not otherwise. The binding threads at *B* form a feature of intense interest to the observer as the fibre passes through its metamorphic career. If the solution is strong and the swelling of the fibre rapid, these thread-like bands sometimes burst and throw out tiny ends, as will be seen at *B*. The striated character of the fibre and the internal spiral core is seen in figure O O. Passing from the ideal to the real, you will notice and better appreciate the points to which your attention has been called. Figures X to XXXXX are true representations of cotton fibres at moments of cessation to the influence of Schweitzer's solution. These were obtained and drawn by me especially for this paper, under a magnifying power of 400 diameters. The

thread-like bands are to be seen at *B*, the expanded strie at *A*, and the spiral core at *C*. Figure XXXXX shows a fibre that has assumed a knotted twist; one of the many shapes cotton fibres take in their convulsions when submitted to the action of the foregoing solution. The bands *B* seem to be of tougher substance than the rest of the fibre, as they sometimes are alone left in the field of vision. The query, of course, naturally arises, what are the functions or meanings of these bands or

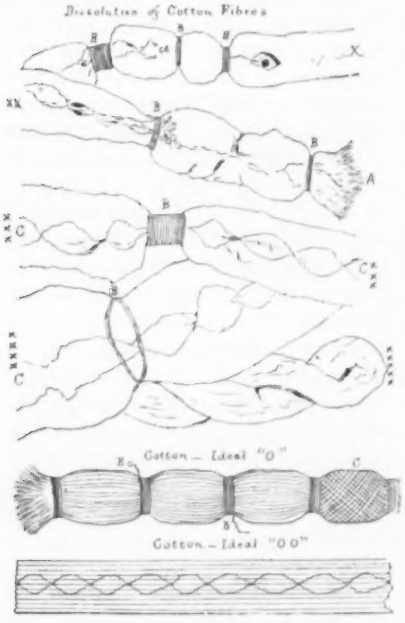


PLATE 9.

rings, and core? The problem thus presented remains unsolved. Still it possesses this advantage, that any fibre having these characteristics is assuredly cotton and nothing else. My observation has been that an ammoniacal solution of oxide of copper acts quicker upon new than upon old cotton. This I attribute to the outside membrane of old cotton being less soluable, or more difficult of penetration, due to the hardening of the resinous covering.

(To be continued.)

Technical Education in Europe.

Abstract of a paper read before the Society of Arts, Boston, Mass., March 25, 1897, by C. P. Brooks, director of the Lowell Textile School, Lowell, Mass.

While the relations of the European nations during the last twenty-five years have been nominally those of peace, as a matter of fact there has practically been in existence a continuous war, not a contest for military or naval supremacy nor contention for territory, but a struggle for wealth and for the control of the commerce of the world. In the course of this constantly raging industrial war, Germany has been the antagonist, and England and France on their defense; one of the latter nations protecting her world wide trade in high grade, substantially made and yet cheap goods, and the other her tastefully designed manufactures. The honors have rested with Germany, and many of her merchants will be ready to admit that the success has been in the fact of the inception of technical education and its introduction on a practical basis in Germany before it was adopted by any other country, and in the immense sums that have been spent by states, cities and manufacturers in high grade trade schools and trade instruction, and that they depend for continued success on the extension and elaboration of their present system.

Technical schools may be classified under several heads: Firstly, what are recognized in England as technical universities, or on the continent of Europe as higher technical schools, or polytechnics, which are high grade institutions for the scientific instruction of skilled engineers, architects and chemists, and which can best be compared in this country to such as the Cornell University, or your own Institute of Technology. Secondly, secondary technical schools, which aim at similar objects as the first grade, but which are not as well endowed or equipped, and are frequented by boys and younger

men who are merely preparing for business rather than a profession, and who desire the training in method that such a school can give. Thirdly, combination schools of science, art and technology, often called technical schools, which are usually evening schools, but in many cases are for the purpose of giving both day and evening instruction. Fourthly, elementay trade schools for the teaching of specific trades, under which head will come manual training schools or apprenticeship schools, and which are represented in this country by such schools as the Manual Training School of Cambridge, Mass., and abroad by the manual training schools which are found in most large cities in England, and also by the Faschulen, of Germany, and the apprenticeship schools or industrial schools of Belgium and France. Fifthly, perhaps the most important, although not the most numerous class, consists of higher trade schools for specific trades. These schools give trade instruction, to my mind, in the most ideal manner, as I will have further occasion to remark. All these schools in the abstract come under the name of technical schools, and the instruction given in them under the term of technical education.

The purely trade school has perhaps reached its highest stage of development in Germany. As an example of my meaning, I would refer to the school at Crefeld. Here, about 1883, $210,000 were spent in the erection of a school merely for the purpose of teaching weaving and such arts and sciences as were of special interest to the weaving industry, the money being contributed partially by the city, partially by local manufacturers, and partially by the municipality. This school has formed the model for almost every weaving school that has since been erected in any country, and although it has since been equalled, possibly excelled in equipment, it has obtained a reputation for excellence which will adhere to it for many years. The influence of the school on the welfare of the city of Crefeld, and indeed on the German textile industry, has been most remarkable. The corresponding French school is the National School of Industrial Arts at Roubaix. Schools that serve the same purpose are in existence in other parts of France and Germany, and also in Italy at Como, in Belgium at Ghent, and in Switzerland at Zurich, all having the teaching of weaving and designing as their object, and including no other studies than those pertaining to the textile industries, in some cases limiting the instruction to the silk weaving industry only. So valuable is the instruction given in these purely trade schools in the Continent of Europe that the possession of a certificate enables the student to obtain occupation immediately when he leaves the school, and the services of the graduates of these schools are eagerly sought after by the manufacturers. This is especially true of the weaving school at Crefeld.

The whole of the technical instruction in England has been practically tagged on to a system of science and art school. To the institution known as the City and Guilds of London Institute, and especially to Sir (then Mr.) Philip Magnus, its secretary, now the superintendent of technological examinations, must be given a very large share of the credit for the introduction of a system of technical instruction in England. About 1879 the Society of Arts, which had done something for two years previous towards establishing a voluntary technological examination without making any payment on results, turned over the conduct of these examinations to the above-named institute, which was established by the wealthy London Guilds or City livery companies for the purpose of providing and encouraging education adapted to the requirements of all classes of persons engaged or preparing to engage in manufacturing and other industries. This association voluntarily made contributions in sums of various amounts

towards the building of suitable local schools, and grants in aid of the establishment of technical schools, but their principal work was in organizing a system of examinations conducted in local centres, but in accordance with fixed standards and by recognized authorities; in making payments on the results of these examinations to the teachers of the classes, and in preparing syllabuses for the guidance of teachers and of organizers of technical institutions. This system was not only applied to Great Britain, but examinations were and are concurrently held in India, Austrailia and other British colonies. Owing to a very strong pressure brought to bear on the Government by advanced educationalists who had become aware of the immense strides made on the continent of Europe, and especially in Germany, in the advancement of technical education, and by wide awake merchants who could foresee the disastrous results that were likely to accrue to British trade, if something were not done to foster technical instruction in England, a royal commission was appointed in the year 1881, and published various reports during the succeeding years. The effect of these reports was to open the eyes of the British manufacturers to some extent to the great progress that was being made by their continental competitors in the better trade education of the workman, the overseer, the superintendent and the employer himself, and the Queen's Jubilee in 1887 was celebrated in England in many cases by the addition of technical schools to the existing science and art schools. A couple of years later, the Technical Instruction Act was passed, which was the first instance of the Government officially recognizing technical instruction. A year later a windfall occurred, which placed technical education in England on a permanent basis.

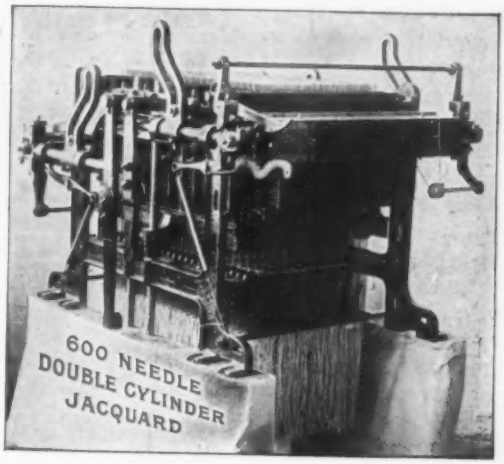
In the session of 1890, Parliament levied additional duty on the manufacture of beer to the extent of 6 pence per barrel, which was estimated to yield an income of $3,750,000 per annum and they found the money was not applicable for the purpose for which it was originally intended and a fresh use had to be found for it. Friends of technical education were wide awake to the opportunity, and they took the matter up, and in a very few days the whole sum was appropriated for the advancement of technical education. Thus indirectly the brewers of the United Kingdom support the technical schools. While the results of the bill appropriating this annual sum have on the whole been satisfactory, still the forced development of these technical schools is far from having been the healthiest growth. The forced establishment of some kinds of technical instruction has resulted in much ill-advised expenditure, and to educational development in wrong directions owing to the lack of knowledge as to what technical education really meant, and in, perhaps, the greatest evil of all, the establishment of classes without an adequate supply of trained teachers. On the other hand, the money came very opportunely to the assistance of many educational institutions. These technical schools have been, in most cases added on to the existing science and art schools. Instruction is almost entirely evening, only a small percentage of the schools having day departments. Since the appropriation made for technical education by the Government the grants from the City and Guilds of London Institute have been discontinued, but this institute is still recognized as the controlling power over technical education in Great Britain. Its position is entirely unofficial but it is tacitly recognized by all of the technical institutions of the country as the leading examining body.

It is too common for attempts to be made to teach too many trades and not specialize any one, thus in England few schools can be found with exactly the same organization and established

for the same object as the weaving school at Crefeld in Germany, and if I may be allowed to add, the Lowell Textile School at Lowell, Mass. The latter school will, when all the machinery arranged for has been installed, be the most complete and best equipped purely textile school in existence. The Bradford Technical School is one of the oldest established technical schools in England. The Yorkshire College, in Leeds, is in the first rank of technical institutions in the United Kingdom. Although it is not a technical school in the ordinary sense of the word, yet it has departments in technology; for example, the textile department, dyeing department, and leather industries department.

Double Cylinder Jacquard.

We illustrate, herewith, one of the specialties of the well known firm of machinists of Philadelphia, Henry Riehl & Son, Nos. 1130-32 Charlotte St. The construction of special machinery is a branch of the business of this concern, the members of which give it especial attention and the utmost care. The firm is well known, having been established since 1850, and justly feel confident of the character of their products, as the result of long experience and fair and honest dealings with those who patronize them.



The double cylinder Jacquard, represented on this page, is the result of careful study in all of its details for a perfect machine. It is well and strongly made, built for rapid work, and wherever used has given perfect satisfaction.

This concern make all kinds of Jacquard movements; single lift, double lift, double cylinder, rise and fall, Brussels and lace curtain styles, any index, from the coarsest to the finest (the latter for lace). Their fine index double lift Jacquard is a strong, durable and fast running machine, and is highly spoken of by manufacturers wherever it is used.

This concern also manufacture power stamping machines for Brussels or lace cards, which cut the whole card at one operation. In addition to these, they manufacture power looms of tape bindings, ribbons, gimp, etc., circular and straight shuttle battons. Their plant for the manufacture of the latter has the most improved facilities, enabling them to guarantee satisfaction in every particular.

—The Royal Agricultural Society of of New Zealand have decided to forthwith start a flock register, to be confined to English mutton breeds. It is probable that the Merino breeders will do likewise.

—It is a fact that nearly all the opposition to a national bankrupt act is due to a desire to maintain the practice of preferences, which desire is due in some cases to selfishness, in others to a very narrow range of vision, and in a few to indulgent feelings towards dishonesty.

COTTON DEPARTMENT.

Cotton Mixing.

ROBERT CUNLEFFE.

When the raw cotton is received at our mills, whatever kind or quality it may be, it has already passed through one machine, viz., the cotton gin. This is found necessary in order to remove the seed from the cotton before it is pressed into bales. All cotton seed contain a peculiar waxy oil, which if the cotton were pressed into bales before the seeds were removed would be brought in contact with the fibres, causing them to be stained.

After ginning, the cotton is made into bales, by means of hydraulic power, in which a very great pressure is obtained. The bales containing the different classes of cotton from different countries, vary very considerably in weight. The average of all the bales of the crop being about 470 lbs. Brazilian bales average 220 lb; Smyrna, 380 lbs; East Indian, 396 lbs; American as exported to Great Britain, 478 lbs; Egyptian, 720 lbs. From this it will be seen that a great weight of cotton is pressed into a small space. This is done in order to save freight, or carriage, as the shipowners charge per square foot of room taken up on the ship. So the greater the weight of cotton that can be put in a given space, the cheaper per pound or per ton, will be the rate. Thus we see, when the cotton is received at our mills, it has been subjected to this very great pressure; and, when taken from the bales, it will be found to be in a matted state adhering together in large heavy lumps.

It is not desirable at all to begin to use this cotton immediately after being taken from the bale, though the writer has seen at one mill, these bales opened one by one and sent at once to the opening machine. A far better plan, and one which is carried out by all the leading firms in England producing the better qualities of yarn, is first, to make a stack or mixing, and also to make the mixing as large as the space available, and the means at disposal will allow. The larger the mixing, the greater its uniformity, both in color and strength, will be the yarn.

We will now proceed to offer a few reasons why we say it is necessary to make a mixing or stack of cotton. The first reason to which we will refer, and which in the writer's opinion is a very important one, but one which is very often overlooked, is the heavy pressure to which the fibres are subjected to in baling. By this pressure the individual fibres are pressed out of their natural condition, doubled up and bent in all shapes and forms; and time should be given them, after being taken from the bale, to get back again to their natural condition, before being sent through any machine.

Another reason is, cotton grown upon the same plant is found to be in different stages of maturity. That is, some fibres are perfectly ripe, whilst others may be only half ripe, and others again quite unripe. This being the case in cotton from the same plants, much more so in cotton from different plants, and the difficulty is increased when cotton from different plantations is mixed together as it sometimes is in the same bale. This difference is increased to such an extent that it is highly desirable to mix all colors even of the same class in a stack, in order to secure their proper assimilation. In order to make this point of our subject more clear, and to add more weight,

permit me to give one or two extracts as tothe importance of ripe over unripe fibres. Dr. Bowman in his book on the Structure of the Cotton Fibre, says: "The probability is, therefore, that in all bolls of cotton, some of the fibres never attain maturity from some cause or other, either their position on the matrix preventing their getting a sufficiency of light or nourishment, or some other reason interfering with the perfect development of the hair. The unripe fibre is a glassy, structureless filament which has resisted almost all twisting action, and only in certain parts indicate the existence of a tubular structure; the thin pellucid unripe fibres which have such attenuated walls that they look like a flattened ribbon. And the fully matured fibres, where the tubular form is perfect and the twisting regular and symetrical, the tube walls are solid and present distinct evidences of cellular or laminated structure."

We may therefore define a typical cotton fibre as a long tubular compound vegetable cell, from 1200 to 1500 times as long as it is broad, with regular and symetrical twists, and the unripe, a flat ribbon shape, destitute of twist.

Mr. Butterworth in his book on "Cotton, and its Treatment" says: "a great deal of cotton is picked before it is ripe; and unripe cotton is not so strong as ripe cotton. Those pods which are fully burst and the fibres expanded are the most ripe, and the distinguishing character of this ripeness is the regularity of the twists in the fibre, and those pods that we may say are unripe are those that are not more than half the size of the fully opened ones, and the fibres contained in them are flat, ribbon-shaped, and destitute of the natural twist. Until the pods are fully ripe and burst, the fibres do not attain their full length, nor do they stretch out to their full length, till the pod is fully opened, but they remain coiled up round the seed, and in this coiled manner they exist in the boll; and if you examine these curled bundles of fibres you will find them of irregular length, but altogether shorter than the fully developed fibre."

I think I need make no apology for this little digression, if digression it be, to prove this one point: that a mixing ought to be made, even when only one class or grade of cotton be used. But very often different grades of cotton have to be mixed together. Suppose for example, we have to mix one hundred bales of Egyptian cotton. These may be divided into twenty or more different marks, yet all Egyptian; but different prices and varying a little in quality. Under these circumstances it is absolutely necessary that a mixing be made in order that an equal quantity from each lot should be regularly passing through the machines.

But again it may be required to produce a certain shade or color of yarn. Brown Egyptian by itself may be too dark a shade, while Egyptian or Orleans may be too light, but by judiciously blending the different colors of cotton a shade may be produced which is what is desired.

There is another point of great importance in connection with the color of the material, and that is, as to whether it has to be spun into twist or weft. A mixing that has to be spun into twist, will be several shades darker than if it had to be spun into weft. It may be explained here that the former is spun with more turns per inch than the latter, and is technically called "harder twisted." This to some may seem rather strange, but it is a fact that harder twisted yarns are a deeper or darker color than soft twisted or weft yarns. The reason is not far to seek. It is found in the varying reflection of the light from the surface of the yarn owing to the different disposition of the fibres. It is well known that the difference in color depends upon the number of rays reflected, and there is no

doubt of this being the correct solution of the puzzle just stated.

A mixing ought to be made for purely economic reasons. The judicious blending or mixing of two or more grades or classes of cotton may produce quite as satisfactory a yarn and be more economical than if any single variety be used. Suppose 40,000 lb. of cotton has to be prepared for spinning, and consists entirely of brown Egyptian at say, 5 3-4 per lb. This would give a cost for the quantity named of £958, 6, 8. Now let the yarn be spun from a mixing of Egyptian at 5 3-4 d. and Pernambuco at 4 1-2 d. in equal proportions. The material then would cost £854, 3, 4, being a saving of £101, 3, 4, to a mill using 20,000 lb. per week, a saving of £50, 11, 8, per week. There is therefore a great advantage to be gained by a proper and careful manipulation of the different grades and classes of cotton. The difference of length and strength, of harshness and softness, of coarse and fine staples, in cotton, shows how important it is that they should be properly selected if a strong and even yarn is expected; and any difference that exists in cotton, however slight, the same difference can either be seen or felt by a practiced eye or hand. I am told that we have cotton brokers who through long practice have acquired such a sensitiveness of touch, that they will engage to pronounce on the value of many classes of cotton in perfect darkness.

A careful study of the different grades of cotton, a training of the eye and hand, and I may add the use of the microscope so as to detect the differences in cotton unseen by the naked eye, such as unripe fibre and so on, will prove of great benefit to those whose duty it is to purchase cotton and give orders for its mixing. If cotton is bought right and then properly mixed, the success of any concern is more than half secured.

In making a mixing it is necessary to remember that all cottons will not work well together, and therefore we must choose those whose fibres will blend and work well in passing through the machine. This is one of the most important points in the mixing of cotton.

We will now give a few rules which must be observed in the successful mixing of different cottons:

First—All cottons in one mixing must have the fibres practically of equal length.

Second—Cottons must be chosen as to color, which when blended will produce the right shade for twist or weft.

Third—Harsh and wiry staples will not blend or draw together in the draft rollers.

Fourth—The price per pound of the different cottons mixed, must be considered so as to arrive at an average value.

Roller-Loom Weaves.

While the roller loom is fast becoming a thing of the past, still there are many mills that are equipped with this style of loom, and must of necessity use them.

The roller loom has always been to many persons a stumbling block, and this has arisen solely from an imperfect understanding of its mechanism; for, except where intricate and fancy weaves are woven, the action is perfectly simple.

The harnesses are suspended by straps to either the front or back of a set of rollers which are above them. They are also fastened to a set of levers, beneath. As each harness is struck or actuated by a cam it is drawn down, which movement pulls the strap that the harness is suspended by, and consequently raises the harness which is strapped to the other side of the roller. So the entire work of the harness consists of a reciprocal motion, one drawing down and the other raising.

In the figures shown, the dotted lines

represent the straps, which where marked "X" on the roller, are nailed to the front, and "O" are nailed to the back.

Fig. 1 is the six harness twill, three up and three down, so that this ar-

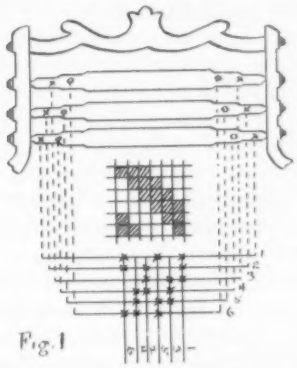
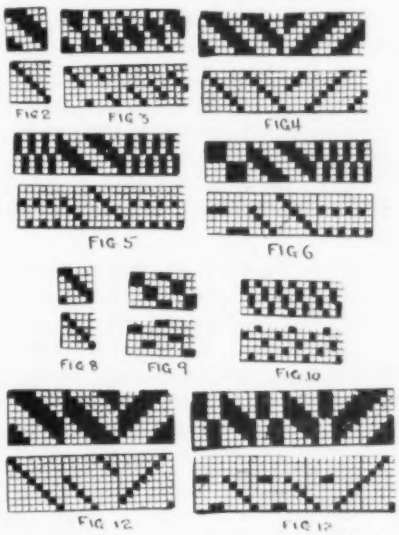


Fig. 1

rangement being evenly balanced, the warp and filling show on both face and back in the same proportion. By a careful study of the strapping of this



figure, almost any weave which is practical to be woven on this loom, can be arranged. The harnesses are marked 1, 2, 3, 4, 5, 6. It will be seen that harness 1, is strapped to the front of roller 1. Now, as previously stated, when harness 1 is drawn down the harness which is strapped to the back of this roller, will be raised, so it is necessary to nail there the straps of some harness which is in the intersection of the warp and filling exactly the reverse of harness 1. It will be seen to be harness 4, so this is nailed to the back. Harness 2 is nailed to the front of roller 2, and then as in the previous instance, the one which is nailed to the back, must move exactly the reverse, and as 5, is the harness which fills the requirement it is nailed to the back. Harness 3 is nailed to the front of roller 3, and as 6 is the exact reverse of 3 it is nailed to the back.

This constitutes the strapping for the six-harness even-sided twill; this same

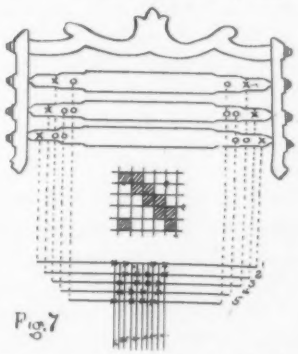


Fig. 7

strapping can be used and a variety of weaves produced by means of a section or cross draw; and by the arrangement of the colors, in the dressing of the warp and the weaving of the filling, a practically unlimited number of effects can be produced.

Fig. 2 is the weave and draw for twill. Fig. 3 is a skip twill which can be woven on this strapping by using the cross draw shown below it.

Fig. 4 is a herringbone running twelve ends in one direction, and then twelve in the opposite.

Fig. 5 is the combination of the warp face rib weave, with the twill, and is woven on the original strapping, by using the drawing-in draft shown.

Fig. 6, is the combination of the basket, rib and twill weaves, and can be produced, by the drawing-in draft shown below, on the same number of

harness, and strapping as used before.

Fig. 7 is the strapping for the five harness twill, two up and three down, and as before, the harness nailed to the same roller must be the opposite in point of intersection in the cloth. As it requires an even number of weaves, this weave is made out to two repeats. The straps are marked as previously "X" to front and "O" to back of roller.

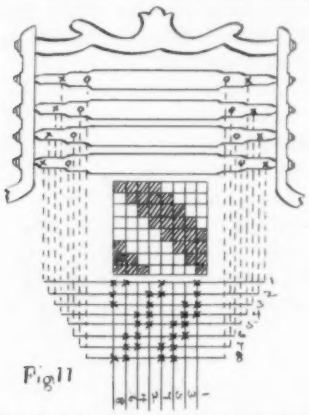


Fig. 8 is the weave and draw for this strapping and Figs. 9 and 10, are variations on this weave produced by using the drawing-in drafts shown below them.

Fig. 11, is the eight harness even sided twill, four up and four down, and the strapping for this is arranged the same as the weave shown in Fig. 1, except a roller is added.

Figs. 12 and 13 are combination weaves which can be woven on this strapping by using the drawing-in draft shown below them.

The use of different drawing-in drafts is probably the easiest method of making different effects on these looms, and various combinations of the same weave on the same dressing will produce entirely different effects.

Yarn Counts.

A MUDDLE — A SUGGESTED IMPROVEMENT FOR UNIFORMITY.

(Continued from March.)

What now are the true principles of a true system of yarn counts?

(1st.) It must be decimal. It is high time all our weights and measures were made decimal. We are almost alone in Europe in clinging to the present antiquated and confusing systems. And now that by our school boards the decimal system is being taught to the rising generation, and nearly all scientific calculations are already constructed in it, we must get the counts of yarns into line with the improvements of the age. Our manufacturers would find it a vast facility in all their calculations. At present not one of the counts in use is based on the decimal system.

(2nd.) The system must show on the face of it the facts which the manufacturer requires to know. These are, the length in a given weight. None of the present systems do this. It certainly can be arrived at by a series of calculations; but a true system of counts should show it at a glance.

(3rd.) It must be equally convenient for the spinner as for the manufacturer, and express what each of them requires to know. The decimal count of yards to the pound is just as convenient for the spinner as the rule-of-thumb methods that many of them now employ; and it is intelligible to every person, which cannot be said of the present systems.

(4th.) It must be adapted to all classes of yarns, of whatever thickness. None of the present systems are capable of being used in this way. It would, for instance, be inconvenient to express a coarse carpet yarn in the Italian scale of deniers or even in the cotton scale, or a fine raw silk in the Manchester scale of drams, or in the Yorkshire "skein" system.

(5th.) It must be adapted to any number of folds and to yarns of different thicknesses twisted together, and to eccentric, loop and knop twists. None of the present systems are adapted to these peculiar yarns. A true system of counts should always indicate the length of the completed thread.

(6th.) It must be written in a way that leaves no risk of a mistake. Here, again, all the present systems are at fault. There is no rule or custom of the trade at present to decide whether 3/5 means threes five-fold, or fives three-fold. Cotton spinners might take one view and silk spinners the other; and if the yarn were of a thread of cotton and a thread of silk twisted together, no one could tell which system it should follow. Litigation has arisen out of this peculiarity. In a true system of counts the number of folds should always be placed *after* the count, and this established as a principle.

The decimal system of counts which I proposed to the Silk Association is the only one that complies with these six necessary conditions of a true system of yarn counts. It is expressed in the following three propositions:

(1) The decimal count is based on the number of thousands of yards to the pound, thus: number ten means 10,000 yards to the pound. (2) The decimal count always means the length of the completed thread, whatever may be the number of folds. (3) In writing the count the number of folds should always be put *after* the counts. Thus: 5/3 will mean 5000 yards to the pound of completed thread of three-folds.

Let us see by some examples that we clearly understand the "decimal" count. Thus 10's would measure 10,000 yards per pound. If another yarn were only one-thousandth part thicker it could be written 9. If it were one-thousandth part finer, it would be written 10^{001}. If a yarn were so coarse as 1 yard to a pound it would be written 0^{001}. Again, the very finest silk counts about 600 cotton scale. This would be 504 decimal, because there are 504,000 yards in 1 pound of such silk. By contrast, take a very thick carpet yarn of 34 yards to the ounce. This count cannot be expressed at all in the cotton scale; but it is quite easy to express it accurately in the decimal scale:—34 yards to the ounce is 544 yards to the pound, and would be written 0^{544}.

Nor are things any better on the Continent. I do not propose that spinners should abandon the counts to which they have been long accustomed. Let them go on in their own way as long as they find it suits their convenience. All I ask is that they should remember the convenience of other people, and this they can do by marking on their bundles, besides their own count, the equivalent decimal count. The merchants and manufacturers would soon find the benefit of it, and in time would prefer yarns marked in this way. For instance, if a manufacturer had to make a warp 100 yards long and 1,000 ends, of a 44 denier silk, the mark 44 deniers does not show him the length in a pound, which is what he wants to know; but if they were marked "equivalent 100 decimal" he would see at a glance that 1 pound of 44-denier silk contained 100,000 yards, the quantity for his warp.

Again, if he were going to use a 2-54 botany, the mark 54 does not show him quickly what length of thread he has to deal with; but if it was marked the equivalent, "decimal count 15's," he would know it contained 15,000 yards of finished thread per pound, and he could speedily make up the weight required. And so on in all the calculations of warp and weft. However many difierent sorts of yarn the manufacturer used, if he had the decimal count of each he could make up his calculations with an ease and accuracy that would be quite refreshing compared with the present complicated and unsatisfactory system.

Reforms of this nature cannot be introduced in a hurry. Time must be given to allow them to be properly understood. They must be explained and discussed, for every proposed alteration is not necessarily an improvement.

There may be reasons against my proposals, which I have not adequately considered. It has been suggested, for instance, that it would be better to adopt the French metric system at once. Now I cannot take this view. It would be

no benefit to our manufacturers, only, indeed, a cause of further comparison, unless we at the same time adopted metres and kilogrammes in all our calculations. What we want, in order to save time, is not a new unit of calculation, but to use decimally the units that we at present possess.

Besides, the "metric" system is not a satisfactory method for folded yarn. 200/2 "metric" means that the single thread runs 200,000 metres to the kilogramme, and is doubled to a length of 100,000 metres. This is clear enough when all the strands are of the same yarn, but the "metric" system, seeing it always counts by the single thread, has no way of expressing the count of a yarn twisted from two or more yarns of different thicknesses, or where one thread is wrapped round the other—as eccentric, loop, or knop yarns. A system which is not appreciable to all sorts of yarns, without making awkward exceptions, should not be adopted.

Practical Suggestions in Weaving.

LITTLE THINGS WHICH ARE SOMETIMES OVERLOOKED.

Occasionally samples come to hand which show one of two things, either that the designer has been careless, or that he lacked a knowledge of the principles of drafting and practical weaving. A few cases that have come under my own observation may prove interesting to others.

At Fig. 1 we have a sketch of a fabric known as checks or plaids. They comprise quite a variety, and one of the main points when laying them out is to get a pleasing contrast in the various combinations. Much of this depends upon the distances at which the ornamental parts are placed from each other. If the plain in the fabric is not wide enough to balance the stripes, the cloth is apt to present a bulky appearance, and if carried too far the opposite way, the effect is generally a lack of anything definite, and the combinations are vague and lack life. The happy medium, when size and form are clearly distinguished, is the point to work for when laying out along this line.

The principal features of the sketch are the heavy spaces in black, which represent filling floats. The threads at this point are drawn 4 per cent., and the weave, when the float is not forming, is the $\frac{5}{1}$ twill. The filling stripe is the $\frac{1}{5}$ twill, but at other times these six harness form the plain weave.

Between the heavy black squares is a space equal to two dents or threads. The question is, shall these four threads be drafted from four of the regular plain harnesses, which also form the filling

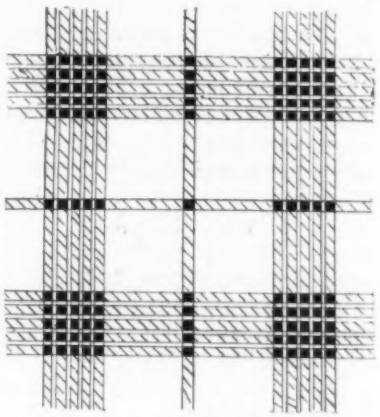


FIG. 1.

stripe? If so, then we shall get a fabric which will differ considerably from the sketch, for the filling, instead of being cut off clean at the edge of the float, will run over more than one thread of the four when the filling stripe is weaving, which gives a very ragged appearance at this point. The proper remedy to produce a nice appearing fabric from such a sketch is to draft the four threads from the selvage harness, which, working plain continually, will tie the filling on each side of the spot, instead of allowing it to run into its neighbor, as in the first case.

Another common error is found in fabrics where the satin stripes are combined with sections of plain. Quite often the last thread of the satin and the first thread of the plain, or vice versa, on the opposite side of the stripe are arranged according to the chain plan and drawing draft, to link together on the same pick of the weave. The consequence is that the satin thread not being bound by the first plain thread will sometimes fray out a little, giving the goods a faulty appearance, whereas if a riser had been placed against a sinker, as can often be done, it would have served to bind it close, and keep the thread in its proper position. A careful reference to Figs. 2 and 3 will clearly illustrate this.

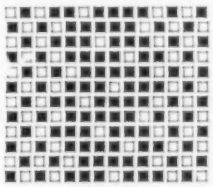


FIG. 2.

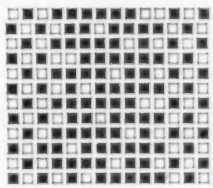


FIG. 3.

One of the most troublesome things to be met with, when making plaids or checks, is that of cracks or thin streaks at the point where the satin weave changes back to the plain. This is more particularly the case on light goods of seven yards and over. There are several things which tend to aggravate the difficulty if not given proper attention. One of these is a dirty, sticky friction rope, which lets off the warp unevenly. A good remedy for this is to use black-lead on the friction roller, which helps the slipping considerably.

During the time that the filling stripe is being woven the warp threads are only intersecting once in six picks, probably only one-third of the harnesses are up and the warp is not being drawn off the beam to the same extent as when weaving the regular plain. The picks go in quite easy here; but on the first pick changing back to the plain, more harnesses are required to lift, and if the belt is not good and tight the loom will partially stop, and occasionally bang off. This is one of the points which often prove a stickler to the green section hand, as many of them know from that best of all teachers, experience.

Not having the checking pegs uniformly distributed is another cause of thin places immediately after the filling stripe is formed; and on the double-action machine, uneven sheds, *i. e.*, one shed lifting higher than the other, is a common cause of streaks. On light fabrics, turning the shedding so that the harness will level when the reed is from three-fourths to one and one-fourth inches from the cloth, with the tension rather slack, will be found advantageous.

A case comes to my mind of a fancy mill, which at one time was making a line of checks, differing a little from the usual kind, and which for some time caused considerable trouble. The various patterns were combinations of plain with the six harness satin. At the point where the filling stripe came in, the warp satin harnesses were forming a sort of ribbed effect; three of the six shafts being up for five picks, then the other three were lifted to the top shed, the first three remaining down for the next five. The stripe was a heavy one, being drawn six in a dent, and the yarns were quite tender, 65s Egyptian. They would run along all right until the rib came to be formed, at the change where three threads had to pass their three mates on their way to the upper shed. Much trouble was experienced in making them split so as to form a passage for the shuttle. The

threads being six in a dent made this a very difficult matter. Kinky filling, breakages, etc., were of such frequent occurrence that weavers would clear out rather than run them for the meagre pay they could make. It became a tramp job. Looms were constantly stopped for want of weavers, and the percentage of seconds on this particular style reached an unprecedented height.

Talking over the matter one day with a friend, it was suggested to the designer (who was bright at laying out fabrics, but had never been a weaver or fixer) that he reverse the position of the harnesses by bringing that section in front which gave so much trouble, and putting the plain shafts in the rear, at the same time arranging the head-motion so that the harnesses would level at the bottom centre of the crank, thus giving the troublesome weave the largest possible amount of time for opening the shed. After thinking the matter over he concluded to try it, and the result certainly gave him a little surprise. It was not many days before the rest of the warps had been drawn over and replaced in the looms. It did not take the weavers a long time to find that the work was running better, and from that time on there was no lack of weavers, who now made more money for themselves and the firm, and produced the required quantity with a percentage of seconds that did not differ from other styles in the same room.

Now where was the trouble? Simply that in trying to split the threads with the harnesses so far away from the reed, the harnesses had been compelled to form a large shed, which played havoc with the yarn, whereas by placing that section of harness where all the trouble occured, *i. e.*, near the reed, enabled the threads to separate with a much smaller shed and far less wear and tear on the yarn than in the first place. The points brought out in this chat may prove suggestive to those who have experienced difficulty along this line.

LENO.

Fixing the Northrop Loom.

II.

It is advantageous to have the filling bobbins for the Northrop loom wound hard, although it may be well enough if the bobbins are only moderately hard. A good hard bobbin will wind off better; the yarn is less likely to loosen and knock off, and they handle better. Of course the bobbins for the new loom differ some from ordinary kinds, and if a common bobbin is put into the hopper by mistake, there will be a break out, all of which causes waste of stock and time. As the work is all automatically done, so far as the filling feeding is concerned, it is best to have the bobbins in good shape. Warped, poorly formed, cracked and likewise imperfect bobbins will cause delays. Kinky yarn will weave as in the common loom. If too kinky, a little steaming will rectify. Weak and cut yarns will of course give trouble and should not be tolerated.

One of the first subjects which the fixer of the Northrop loom contends with, relates to speed. It has long since been proven that an excessive rate in looms does not pay in the end. There are some types of narrow cotton looms which will stand speeding up to a high rate, and will work well on plain goods, so far as the loom itself is concerned. But there is extra wear on the warp yarns and extra breakage is apparent.

A steady running loom, even if the speed be lower, not only does the best work, but usually comes out ahead in production in the long run. What is gained in speed is lost through frequent stoppages to tie up ends, to fix the parts of the loom which the severe strain of too high speed has loosened, and so on.

Thus, in starting up the Northrop loom, the fixer or boss weaver should bear in mind that the loom is built on

PRINTED MOCK LENOS.—LENOS AND LAPPETS.

(SEE PAGE 42.)

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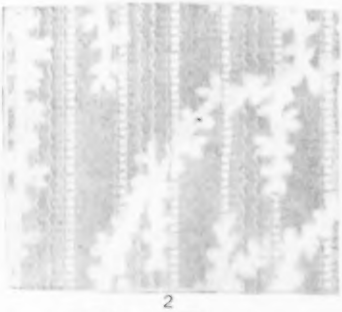

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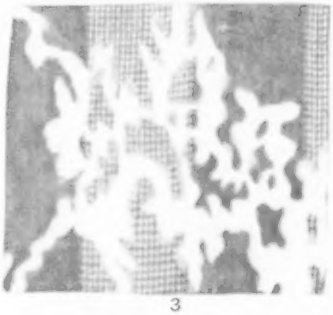

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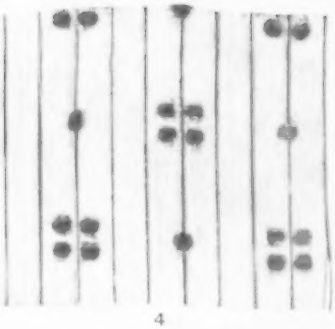

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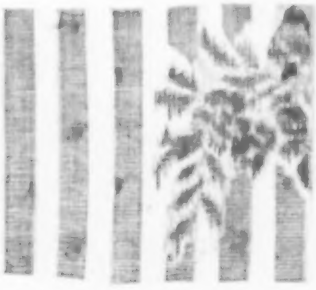

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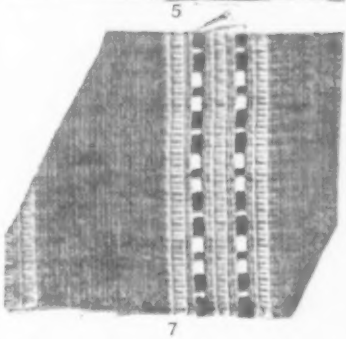

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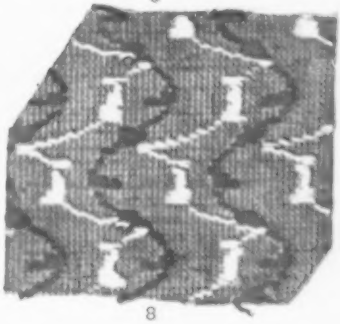

8

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the principle that it is going to run constantly, and a high rate of revolutions is not important to a large production.

If a 28-inch loom, about 180 to 190 picks per minute will answer, although the writer has successfully speeded them up to over 200 picks per minute.

The rules to observe in adjusting the pick do not vary very materially from those followed by the average fixer in setting the common loom. Of course the aim in every case is to get an easy pick, and whatever adjustment secures that end, is favorable to good work. Under ordinary conditions the crank of the top shaft should be perpendicular when the loom is about to pick. If the loom were running boxes, the crank would have to be slightly behind this point so as to give the boxes ample time to change. But this not being the case, the crank can safely be set well ahead, resulting in an easier pick.

The causes of a harsh pick arising from worn picker balls, cams, strappings, etc., will not be a factor at first as these looms are mostly new; but there are plenty of other reasons why the loom will pick hard, and a hard pick in the Northrop loom may bother, as it may throw the shuttle crooked or cause the loom to stop with an empty bobbin in the shuttle. Special shuttles go with the loom and they cost too much to be permitted to stagger against the sides of the boxes, fly out, and perform other feats which produce wear.

So get a good, even and smooth pick on the loom at the start. When once it is obtained, keep the loom there by using good fixings. Use substantial leather for check and all other straps. Shiftless work and loose methods will wreck any sort of loom.

The stop motion must be gotten into good working order before a yard of cloth can be woven. The looms are sent from the shops in good shape, and all the parts and motions are adjusted as nearly right as general circumstances will permit; but the jar of shipment to the mill, the loosening of bolts and other matters, tend to upset things a little, so that when the loom arrives at the mill there is more or less adjusting to do. Besides, the character of the goods to be woven forms an important part, and the loom must be set to correspond. All this has to be done at the mill. It is not so much the way that the stop motion is set that appears to bother, as it is the accumulation of waste and foreign matter that are sometimes present. Lint will clog the detector and prevent its free working. Of course the fixer will examine the vibrator first, and see if that is properly set. If it is, then other matters are causing the trouble, and these very likely are snarls, slack threads in the warp, and like defects. It is well to have a little patience with the warp stop motion, as, in many instances, the device has bothered for a week or two and then worked all right after the cotton threads have smoothed off the metallic pieces. Sometimes trouble arises from the vibrator spring being too stiff. This spring should be set so as to act freely and promptly, and it will not do this if too strong. Furthermore, if too stiff, the spring will have a tendency to bend the drop wires at their ends. Set the vibrating detector well away from the detectors, to avoid the results of poorly dressed warps in which loose and irregular tensioned threads exist.

Weavers, like every other class of help that work for long periods on one class of machinery, get into fixed ways. Some weavers get so accustomed to a left hand loom that they do not like to change to a right hand style. When it comes to putting a weaver on a Northrop loom for the first time, some of them get bewildered at seeing so many new movements, and even have been known to refuse to undertake to run a set of the looms for this reason. But they do not hold back long. The most timid come around all right after a few trials with the fixer alongside. Hence, one of the duties involved upon the

fixer during the starting stages is educating the weavers into the new conditions. First, the weaver should be taught how to fill and care for the hopper. This can be done with the looms running. Then comes the all-important lesson regarding the proper placing of the threads of the bobbins in proper notches of the hopper. A simple process, yet it seems to bother beginners for a few days. Teach the weavers to keep the parts of the loom well oiled and free from dirt, lint, and so on. Show them how to take advantage of the time just before the quitting hour, so that they may arrange the looms to run during a part of the noon hour, and for thirty or more minutes after closing down at night. It can be done readily. There is considerable extra cloth thus woven, all of which counts to the advantage of the weaver who is on piece work.

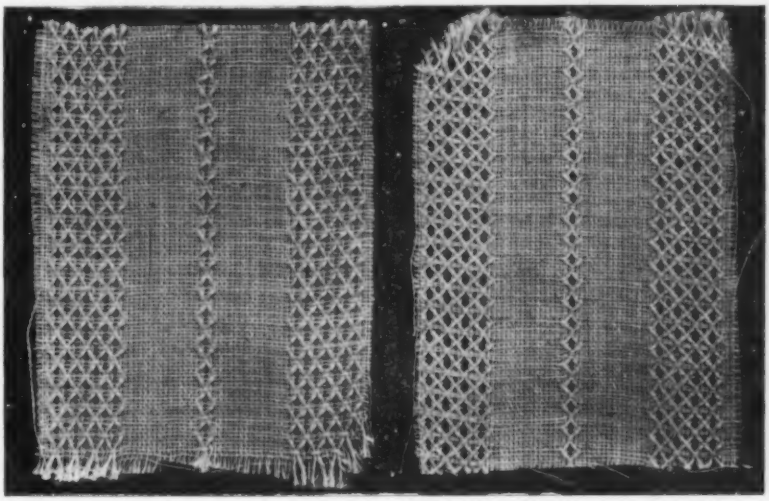
It is claimed by some that the Northrop loom calls for a higher degree of skill to fix it and that higher priced fixers must be had. This may be true at the start, for as is the case with every new machine that comes out, comparitively few men understand it, and consequently they are in demand and demand always increases wages. But this is nothing permanent. There are new fixers coming up everyday who are making a speciality of the Northrop loom and by and by there will be plenty of such men in the market.

Leno Weaving, or Gauze.

Leno weaving (or gauze) may be said to consist of all varieties of cloths, whose warp threads do not lie parallel to each other in the process of weaving, but one set of threads are more or less twisted in different ways around another set of threads. There are three varieties of leno that are woven on our dobbies and Jacquard heads, but only two of them are really practical. The three varieties are commonly known as the "half-turn leno," "full-turn leno" and the "turn and a half leno." These leno weaves are very little known as regards the true distance that the threads turn or twist around the other set. The impression being that on the "full-turn leno" weave, one set of threads turn, or twist, completely round the other set of threads, whereas, they turn but half way round, and should be known by the name "full leno." In the "turn and a half leno" weave, one set of threads are supposed to turn, or twist, one-half times around the other set of threads, whereas they but describe a complete circle around the other set. It should also be understood that both sets of threads do not twist around each other in forming these leno weaves, but simply one set of threads twisting around another set that are drawn straight through these harnesses. The names "half-turn leno," "full-turn leno" and "turn and a half leno" should be changed, and the names "half leno," "full leno" and "full-turn leno" substituted for the following reasons: 1st. That one set of threads in the leno weave known as the "turn and a half leno" do not turn one and one-half times round. 2nd. That the threads in the leno weave known as the "full-turn leno" do not make a full turn. Also that in the leno weaves known as the "half-turn leno" and "full-turn leno," one set of threads are made to turn, or twist, half way round another set of threads, but while the latter weave produces a very decided gauze effect, the former weave will make no perforations in the cloth whatever. The leno weave known as the "half-turn leno," not making any perforations in the cloth, cannot be classified as a gauze, hence the name "Leno." Again, in fabrics where there is a combination of "gauze" with plain or figured weaves, they also are classified as leno. When the designer speaks about a "half-turn leno," he means a leno weave that can be woven on any "double lift," or open shed machine, without any other attachment being

necessary. This weave can also be woven on a "single lift," or closed shed machine. And when he speaks about a "full leno" or "full-turn leno," he means a leno weave that must be woven on the "single lift," or closed shed machine, and cannot be woven on the "double lift," or open shed machine, without some extra attachment being necessary to level the leno harnesses on certain picks, or at the time the crossing takes place. This extra attachment practically making the open shed machine into a closed shed machine, as far as the leno harnesses are concerned.

No. 1. No. 2.



In the two weaves known as the "half leno" and "full leno," it is hard to believe that the only difference in the make-up of these two weaves, is in the manner or time of lifting the leno harnesses, but such is the case, for they are both drawn into the harnesses exactly alike. Fig. 1 shows a sample of cloth woven on the "half leno" principle. This sample, at the time, was being woven on a "single left dobby," but did not require it. Fig. 2 shows the same piece woven on the "full leno" principle. So all that was needed in changing from one to the other was a new harness chain. These weaves will be fully explained later on.

The leno weave known as the "turn and a half leno" not being a practical weave, nothing need be said of it further than to explain and show how one set of threads are made to twist completely around another set, and this will be done after the other two have been taken up.

I will now endeavor to explain the manner in which these crossings of the threads are accomplished. First let me ask you to imagine yourself standing in front of a loom in which there are two harnesses hung up. Now, in your mind's eye draw two threads through the heddles, one on each harness, begining with the back harness and draw from right to left. The set of threads that are made to twist around, are called the doup threads, and the other set are called the crossing threads. The thread on the back harness is the doup thread. Now lift up the doup thread and pass the shuttle between the two threads, then drop the harness and as we examine this pick, we find that the doup thread comes up on the right hand side of the crossing

thread. Now let the two harnesses remain down, and with the finger and thumb pass the doup thread under the crossing thread, and lift it up high enough for the shuttle to pass between the two and drop the thread as before, examine this pick and we find that the doup thread comes up on the left side of the crossing thread. Now lift up the doup thread with the back harness, and pass the shuttle as on the first pick, this will bring the doup thread back again to the right of the crossing thread, and you have a pure gauze. I said on the second pick to pass the doup thread under the crossing thread and lift it up. Now here comes one of the many mysteries of cross weaving, for you cannot lift it high enough for the shuttle to pass between without a

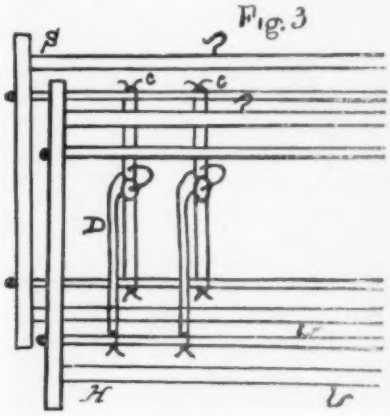


Fig. 3

great amount of strain coming on the doup thread. So we have to provide a means of easing up on this thread, and for this purpose we have what is called a "slackner," or you might say an extra whiproll, which is set three or four inches back of the main whiproll, and over this slackner is passed all the doup threads. Now as you lift the doub thread on the opposite side of the crossing thread, this slackner is made to swing forward far enough to give slack to the doup threads, thus removing all strain, and as the doup thread is lowered the slackner will take it back to its proper position. I also said with the finger and thumb pass the doup thread under the crossing thread and lift it up. Now for this purpose we have provided what is called a set of doup harnesses. This set of doup harnesses consists of a "standard" and "half harness" or "doup harness." The "standard harness," so called, can be made from a regular cotton harness with the eyes cut off where not needed, only those left on to conform with the pattern to be made. Also another good way to make this standard harness, is to use a regular wire heddle frame, and for the eyes unravel a cotton harness, then tie the eyes separately the proper length and slide onto the heddle frame, as you would slide on wire heddles. The "half harness" or "doup harness," so called, can be a regular wire heddle frame, and to this frame is attached what we call the doups. These doups, or doup twine, are made of a very fine worsted; it is bought in skeins, and then cut up into proper lengths. These sets of doup harnesses are invariably hung in front of all other harnesses, the half harness being hung on the first jack of the dobby, and the standard harness on the second jack. In tieing in a doup, one end of the twine is passed through the upper half of the cotton heddle on the standard harness; the other end is passed through the eye of the heddle, and the two ends are then tied fast to the lower shaft of the doup or half harness. (See Fig. 3.) Care should be taken not to tie these doups too tight, or short, or they will not only pull the cotton heddles all out of shape, but they will soon wear out. Fig. 3 shows a set of doup harness, *S* is the standard harness, *C C* are the cotton heddles on that harness, *H* is the half harness, or doup harness. At *D* is shown the doup, and the manner of tieing in the same. "DOUP."

Egyptian Cotton.

A few remarks concerning Egyptian cotton at the present moment when cer-

tain localities are advocating that a duty be imposed upon that useful product, may not be out of place. This request for protection certainly appears absurd particularly when it is remembered that the amount of Egyptian cotton imported is relatively very small compared with the total consumption of cotton in this country and that no American cotton can be substituted.

For years past English and American spinners have repeatedly urged the South to improve its system of ginning and baling but all to no purpose and the factories have had to accept cotton delivered in most cases in a manner which does little credit to the shippers. On the other hand, India, Egypt, and other cotton producing countries have adopted a system which has done much towards the starting up of new industries. Today, the South, which has been content to remain behind, calls out for protection against this "serf labor and cheap transportation."

In regard to transportation, let it be borne in mind that a steamer capable of carrying say from 10,000 to 12,000 Egyptian bales can take only from 6000 to 8000 American bales, when, according to weight, it should carry about 14,000 bales, so that Egypt, by means of its hard-pressed bales had reduced the cost of transportation about one-half; the insurance and other risks being reduced in proportion.

If our mills are to continue making fine goods the importation of Egyptian cotton must not be stopped. These industries have made a considerable advance during the past few years and fine goods which were formerly imported, are now being successfully made by the use of Egyptian cotton.

It is essential, in the first place, that the cotton for such purposes should be free from nits, which is practically impossible when the fibre receives the harsh treatment of the saw gin in use in the South.

In the second place, there is a lustre about Egyptian cotton which is one of its peculiarities and which it is impossible to find in any similar fibre. This lustre and the brown color, can be safely attributed to the peculiarity of the soil in which the cotton is raised and for that reason it may be safely concluded that what we call Egyptian cotton can never be successfully grown in the United States although experiments with that end in view have lately been made. A product may certainly be obtained but the cotton will lose its nature and characteristics and, of course, a saw gin would quickly remove any resemblance that might remain. To sum up: Egyptian cotton does not compete with any domestic staple because nothing like it is grown here, and it is manufactured into a class of goods for which American cottons are not suited, either on account of color, lustre, or other distinctive features. It is needless to add that the development of the industries referred to is owing very largely to the facilities offered for obtaining this cotton, and the industries would suffer severely in case a tariff be imposed. Undoubtedly the imports of recent years have shown a steady increase and it is this fact, no doubt, which has alarmed Southern planters. It does not follow, however, that this increase will continue in like proportion, because there is a limit to the demand for fine goods and the supply of Egyptian cotton must also be considered as limited.

There appears to be, in some localities, a wrong impression regarding the area of cotton growing lands in Egypt, a very common idea being that the acreage may be increased as readily as in Texas, to supply the demand. This is very far from being the truth and can better be understood, perhaps, by referring to a map of the country and bearing in mind that the Nile Valley and Delta is practically the only land suitable for cultivation. The cotton which is imported into the United States is almost entirely what is termed Delta cotton; that is to say, it is grown

in the land north of Cairo. All of this land is of a very rich nature and practically the whole of it may now be considered as being under cotton.

As the cotton plant very soon exhausts the soil it is impracticable to grow crops oftener than once in two or three years. It may be true that annual crops could be obtained by means of fertilizers, but there is little inducement to use them as the fellaheen find it more economical to alternate their crops of cotton with beans, wheat, or berseem. These crops give to the soil what the cotton has drawn out, and, as they pay well, fertilizers have never been used excepting in a few instances. In a recent report issued by the Department of Agriculture it is stated that extensive irrigation and drainage systems are now in the course of construction. This, however, is not the case and the statement is, therefore, misleading. Some few years ago a commission was appointed by the Government to determine upon the best plan for increasing the water supply of Egypt. Various plans were suggested but what are known as the Philæ and Whitehouse schemes appear to be the only ones that were seriously considered. It was decided that the former was the most feasible, but, as it called for a dam across the River at Philæ and the submersion of the Temple on the Island it was far from being popular. The Whitehouse plan had also serious drawbacks and so the matter was allowed to rest. In any event the undertaking would be of a most costly nature and require many years of labor. This the Government is not yet ready to undertake, so that we may safely conclude that it will still be many years before the water supply will be materially increased, and even then it is the Nile Valley or the land south of Cairo, that would first be benefitted, and these lands are not at all suited to the growing of high grade cottons which the American mills require. The land north of Cairo which is not under cultivation is little more than a waste of dry sand, differing very materially from the black earth of the Delta. This land would require the deposit of many floods before planting could be even thought of. The irrigation system in the Delta is certainly being continually improved by additional canals, and the increase in the crops during the past five years is due in a measure to this work, but not so much, perhaps, as to the improved seed, which gives a larger yield per acre. H.

Feeding Cotton on the Picker.

Editor Textile World:

Referring to the following query which you have submitted to me, I subjoin my answer: "Could not more even work be obtained by weighing the feedings with a counterpoise formed of an equal amount of cotton?" Would say in reference to this subject of weighing the cotton upon scales in the picking room (now almost an obsolete operation), it scarcely demands any attention except on account of historical interest. About fifty years ago, when cotton was all weighed previous to spreading, on what was called a cotton spreading machine, generally the finisher lap machine, 2 pounds of cotton being spread on 36 inches for making No. 30s yarn, it was customary to have a weight hanging at the end of the beam, formed of a small tin box with weights inside, a door and padlock for locking the door, the key to which was kept by the superintendent.

The object of this was, when short stapled cotton or damp cotton came to the mill, and it was found that the drawing slivers tested (three or four times a day), were coming decidedly light or heavy, and the change of pinion at the drawing excessive, the weight inside the tin box was increased or diminished to suit the circumstances.

It is a fact generally acknowledged by all old spinners that before the war the cotton was far more uniform as

regards the normal moisture than at a later period after the war. Before the introduction of Lord's opener, some one started the idea of introducing a large cage of perforated zinc or wire cloth to hold an amount of cotton agreeing as nearly as possible with the amount to be weighed, but it will be conceded by those who remember this system, that these cages were generally made far too small, often more for ornament than use, and the cotton instead of being in a very loose condition, was so compressed in the interior of the cage that it could not be affected by the varying state of the atmosphere to any appreciable extent, except on the outer surface. This plan "caught on" however, as it looked scientific to harness the air to assist in the production of even counts, and it was adopted in nearly every mill—the tinsmith taking good care to make them attractive with polished brass mountings.

The normal percentage of moisture in cotton in the bale is from 3 to 4 per cent., and it is doubtful if this is much increased when cotton bales are piled up in the fields adjoining the mills, as can often be seen in New England, except on the outskirts, which is dryed before using. Careful experiments proved that this change of weight in the counterpoise was illusive, but the contrivance perhaps served a useful purpose in impressing the help with the importance of careful weighing, as it was always difficult to get the attendants to be as careful in weighing and spreading as was desired. When it was shown to them that a difference of 1 to 2 per cent. was the very utmost that the cotton cage scale could vary, and that even this small difference was of importance in making good yarn, then it could be inferred that in weighing the fixed standard quantity, it was of the very greatest importance to have neither more nor less than the amount, and equally important to spread the cotton evenly over the 36-inch lattice marks. A spinner of the period, somewhat more cynical than the others, expressed the opinion that the cotton counterpoise might be a monitor to the help, but he was afraid it was "an ironclad monitor," and would neither influence the help, nor be influenced by the atmosphere.

When E. Lord of Todmorden, invented the regulator or "piano feed" for feeding without weighing at all, scales of all kinds were abandoned, and this patent of Mr. Lord has been much improved, in construction if not in principle, since the time of its first introduction. If anyone will refer to the Manchester papers of 1881 and 1882, it will be found that an extensive correspondence was carried on in the newspapers, as well as meetings held in the Chamber of Commerce in Lancashire, regarding the immense quantity of moisture and sand added to the cotton in the cotton growing states of America, and the writer at that time made many careful tests of cotton with regard to moisture, in a large mill using about 150 bales per week. He found on taking 10 to 50 pounds of cotton direct from the centres of the bales and putting the samplings into a room with a temperature of about 72 degrees and allowing them to dry, and afterwards weighing, that they lost in weight from 4 to 9 per cent. These experiments with many others were reported in Manchester, and remonstrances were sent to the cotton merchants in this country. The variation was attributed in the first instance to the very bad weather prevailing in the cotton states, but this did not account entirely for the great irregularity. On opening many of the bales it could be readily seen that a watering can had been liberally used between each of the layers, when putting the cotton into the presses.

It will therefore be seen that no weighing of cotton by a counterpoise weight of cotton could meet a condition of this sort, and the advantage was altogether fanciful. The only way, therefore, of meeting the difficulty of

keeping even counts was to make the laps heavier in the picking room, to provide for the great loss in weight that would occur before the cotton reached the spinning. Experts could fairly guess the increased weight of laps necessary, but it was of much assistance to test the amount of moisture in the different deliveries of cotton coming to the mill. This additional weight was obtained under the old system of weighing, by adding weight to the tin weight box, and under the new automatic feeding system by adjusting the screws provided for varying the weight of laps, and with well constructed machines, it is remarkable how even in weight laps can be obtained, indeed far more even than by the old system of hand weighing and hand spreading. C. N.

Some Rules.

The following are a few simple rules for finding change pinions for twist and roller draft on mules, which may be of value to young men who are trying to work up in the mule spinning room. Suppose, for instance, we were starting up some new mules to spin No. 36 hosiery yarn from a 4 hank roving Egyptian cotton with a twist standard of 2.50. Now take the square root of 36 and multiply the standard 2.50 by 6 and it gives 15 turns of twist to the inch. Now in order to find the twist pulley to give you that number of turns get a constant first by taking all the gears. Let the train stand like this, leaving out the change pulley. $\frac{25\times9\times22\times.80\times30}{50\times50\times7\times1.00\times6}=1.13$. Now this 1.13 is the constant. To find the twist puley for any given number of turns of twist. Now, as we want 15 turns in this case, we simply multiply 15 by 1.13 and we get 16.95 for the pulley. Of course this means a No. 17 inch pulley. I have added one-half of the diameter of the spindle band to the diameter of the spindle whirl, making it .80 instead of .75, as all bands drive from their centre.

To find change pinion to spin No. 36 yarn from 4 hank roving with their train of draft gears: crown 120, back roller gear 54, front roller gear 22, diameter of back and front rollers 1 in. Take every gear that, if made larger, would give more draft, and multiply them together for a dividend; and each gear, that if made biger would give less; multiply them together for a divisor like this.

22 (front gear)$\times$36=792.

20 (crown gear)$\times$54 (back roller gear) =6480$\times$4=25920.

25920$\div$792=32.73 pinion.

T. H. C.

Shuttle Guards.

Recent court decisions in England, have made shuttle guards on looms an important factor in the weaving department. The use of such guards is not a new one, as they have been employed for forty years, at least, most of them upon the principal of a rod of iron about the full length of the reed, bent at each end and secured to the lathe by screws. Within the last five or six years there have been a number of shuttle guard inventions, but most of them have been found to be inefficient. They all, in a certain degree, tend towards minimizing the number of accidents from flying shuttles. The case that was tried before the courts, in which damages were assessed upon the manufacturer, came under the factory act of 1878, as amended by the act of 1891, in which it appears that the manufacturer neglected to fence the loom, in consequence of which, it was alleged, a shuttle had flown out and seriously injured a weaver. The clause of the act under which the case was brought has the phrase "dangerous parts of machinery," and it was the construction of this that determined the case against the manufacturer. The contention was that this phrase could not be applied to a loom in the ordinary process of working. It was proven in the course of the case "that shuttles were in the habit

of flying out, first, in consequence of the shuttle not being true; second, in consequence of the negligence of the weaver in making the picking band too tight, or some other negligence, which was the case in the present instance; third, in consequence of some obstruction getting into the shuttle race; and fourth, in consequence of some defect in the yarn or thread used in the loom." It was argued, however, that a machine that was liable to become dangerous was a "dangerous machine" in the meaning of the act, and although it was admitted that a loom need not necessarily be dangerous in the ordinary course of working, yet, by reason of some derangement, it was liable to become dangerous, it came within the words of the foregoing phrase.

Bleaching Cotton Cloth.

There has been no marked improvement in the bleaching of cotton cloth since the discovery of chloride of lime by Tennant.

It would be claimed by some bleachers that the Mather & Platt bleaching kier was an advance, but the majority of bleachers refuse to put the new process into their works, and so, if majorities are decisive, it would appear that the Mather & Platt process was not yet an acknowledged improvement. At the same time it must be said that figures and statistics are sometimes most unsatisfactory to draw deductions from, as will be acknowledged by those who have seen it proved by statistics that a bed-stead is the most fatal place in the world, since more people die in bed than anywhere else. The Mather & Platt kier is very expensive, and that one fact might elucidate the reason why it is not in more general practice. The process of bleaching, in the main, goes on as of old: Lime boil, grey sours, soda boil chemic, white sours. Variations are made by some using the resin soap, and some use pressure in kiers. The combination of the two kier boilings is effected by the Mather-Platt machine: CaO_2H_2 and Na_2CO_3=2NaOH and $CaCO_3$. This NaOH, or caustic soda, recalls the old dispute over the mercerizing of the fibre. Caustic soda enlarges the fibre and makes the dyes take more readily; but any advantages are offset by the fact that the fibre is weakened. It is, of course, a question of degrees merely, and can be adjusted by the careful bleacher so as to be unappreciable. The Norwich Bleachery and the Wilmington Works were the first in this country to take up the Mather-Platt process. HUNT.

Standard for Compressing and Inspecting Cotton Bales.

The New Orleans Cotton Exchange put into operation last February, certain rules relative to a standard for compressing and the inspection of compressed bales, as follows:

The standard of compressed cotton shall not be less than 22 1-2 pounds to the cubic foot measurement on wharf, or alongside of vessel.

Cotton bales shall be delivered to vessel with not less than six bands, and in proper shape. The bands shall be placed at about equal distances from each other, the end bands not to exceed eight inches from end of bale.

Measurements shall be taken on the bands for width and thickness, and from both ends of the bale for length.

The ship agent finding cotton to be badly compressed, in accordance with the preceding rules shall at once notify the shipper, who, within two (2) hours of receipt of such notification (always provided during ordinary business hours), shall be bound to signify his acceptance of condemnation, or to name an inspector mutually agreeable to himself and the ship agent, whose decision shall be final.

On all cotton condemned as badly compressed under the preceding rules the shipper shall pay to the ship as follows: For each bale of a density of 20

pounds or over, but under 22 1-2 pounds per cubic foot, 12 cents per bale; for each bale of a density of 18 pounds or over, but under 20 pounds per cubic foot, 40 cents per bale; for each bale of a density under 18 pounds per cubic foot, 50 cents per bale. Provided that either ship or shipper shall have the option, instead of settling at above allowances, of recompressing at shipper's expense all bales of a density of less than 20 pounds per cubic foot, except in cases where cotton is delivered to vessel on the day it finishes loading, in which case the ship shall have the right to put the cotton on board without recompressing, and collect from the shipper according to above schedule.

New Kind of Rollers.

There has been a recent foreign invention intended to supersede leather covered rollers in spinning and drawing machinery. Our English advices state that it promises to work a revolution in spinning practice. The patent, it seems, was taken out nearly three years ago. The construction of the rollers is that of building up "sheets of cork or pieces of cork put together in any suitable manner," the final form of the roller being analogous to that of the emery wheel. The cork is first broken up into a granulated form, and is then mixed with a binding material of glue, shellac, resin, oil, etc., into a plastic paste, in which condition it is moulded and subjected to great pressuse, the result, when dried, being an absolutely homogeneous material of the same specific gravity as mahogany, but entirely different from wood in other respects. It can be turned in a lathe just as readily as wood, but is much more elastic. Unlike wood, it is not liable to crack, warp or shrink, and it needs no leather covering.

—An improved tape sizing machine has been placed before English manufacturers, in which the creel is of the usual character, arranged to carry any number of beams required. The size box is of ample capacity, into which the size is fed from a second compartment provided with a regulating float valve. The size is kept at the requisite heat by a steam pipe running along the bottom of the size box. In place of the ordinary immersion rollers, skeleton rollers can be applied, the principal advantage being that they allow the size to come in contact with the whole of the yarn surface, and thus, of course, facilitate its impregnation. Drying cylinders can be made up to 84 inches in diameter.

—The way labor agitators are securing legislation against the hours of labor in New England mills, is a discredit to common intelligence. They are getting hours down so short that mills are having hard work to give adequate return on invested capital, and the result will be that unless this agitation is stopped and corrected that the mill business of New England will have to go to the South where the mills can make some money.

—President Lane, Alabama, of the Cotton Growers' Protective Association, is seeking to have the cotton acreage reduced just when Texas is priding herself on the prospects of the biggest crop in her history. "It is not less acreage in cotton," observes the Galveston Tribune, "so much as more acreage in food products and more systematic and business methods of farming that this country needs."

—The seat of the embroidery industry is the southwestern corner of Saxony. In this part of Saxony, the Vogtland and Erz-Gebirge, embroidering by hand has been followed for centuries. This may have been due to the circumstance that in these sections there is not a specially fertile soil, so that the population was obliged to apply its working abilities to the service of some other branch of activity besides agriculture.

WOOLEN DEPARTMENT.

Colors in Fabric.

THOMAS R. ASHENHURST.

"Variety of colors may conduce to beauty" is an axiom laid down by a well known writer on colors, but it is well known that if the colors are not properly blended the result may be anything but beautiful. Many of the mistakes made in coloring fabrics arise from a lack of a proper perception of the conditions under which color is seen, or if the influences colors have upon each other when combined or juxtapered. The colors of a landscape, for instance, will vary according to the light of which it is illuminated. A green tree in the early morning will appear dull and grey, in the bright mid-day sun it will appear yellow, in the last rays of sunset it will assume a purple hue. This may seem to have little bearing on the coloring of fabrics but there is a direct connection, as light and shade in any color combination exercise an influence upon the whole effect and upon the individual colors of which it is composed as well. Whatever may be said for or against Chevreul's well known laws of "simultaneous contrast" it must be admitted that they form, at least, a poor standpoint from which to observe and study colors. We can afford to disregard all the theories of what are the true primary colors, and proceed upon Aristotle's maxim that "all color is intermediate between light and darkness," and study colors as we see them.

It is no uncommon thing to hear a merchant or manufacturer complain of the quality of a black, for instance. The quality of the black will vary according to the colors with which it is combined. Make a striped or checked cloth with black and blue; black and red, or black and orange, and the quality of the black will be different in each one, although the same yarn is used in each case. This is simply due to the influence of the color upon the black. The same remark applies to the influence of one color upon another. Not merely does the presence of different colors influence each other, but their relative quantity and the amount of light and shade, or black and white, also. There are numerous ways of studying and comparing their effects. One of the simplest is to take strips of colored paper or cloth of varying widths and lay them side by side upon white, black or neutral grounds and compare the effects. When the effects have been noted with the colored strips laid close together move them slightly apart so that they are separated by a narrow strip of white or black, then move them a little further apart and careful observation will show that there is a distinct influence upon both colors and ground. If very strong constrasting colors, such as blue and orange, or red and green are used the effect is all the more marked. It is best to study color effects in a steady subdued light, so that the quality of the color can be best observed.

Another simple method of studying color is to sit in a room where there is a stained glass window and note the effect of the light as it passes through the different colored glasses upon a carpet or other object. Whenever the light passing through red glass falls upon a red object, or any color partaking of red the color is enhanced, whilst other colors will be subdued or destroy-

ed, and so with all the other colors. The same effect can be obtained in some degree by using strips of colored glass and moving them about over colored objects in strong sunlight, but the results in such cases cannot be so perfect as when all light but the one is excluded because of the interference of the white light surrounding the colored ray, and which in some degree must mix with it.

In fabrics there are at any rate two distinct methods of combining colors: First, combining them in greater or less masses in stripes, checks or figures; second, by mixing the fibres of which a thread is composed; or it may be twisting differently colored threads together, but the two great divisions will answer all present purposes.

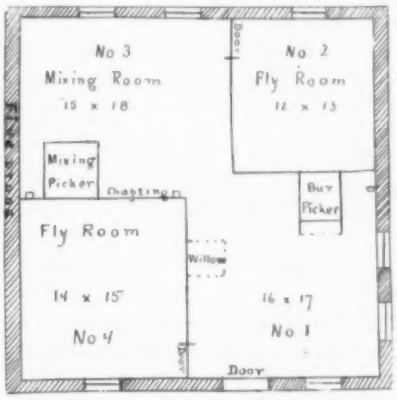
In the first of these two great classes the interference of the colors with each other or when combined with black or white, although a factor to be seriously considered, is not so subtle as in the second class, and in this connection it is necessary to show that the law of simultaneous contrast is in reality an optical illusion, as in fact may be said of all color changes. We may say we know the foliage of a tree is green, but it is not of the same quality of green for the period of one day.

(To be continued)

The Preliminary Department.

As many will understand that a Preliminary department is the beginning of a business, so we wish to bring before the readers of the TEXTILE WORLD the importance of this department which is connected with this process of woolen manufacturing; there are many who do not pay the proper attention to this department as should be, and therefore we have taken the opportunity to advance a few ideas.

A little consideration and a few dollars expended by some manufacturers will, we feel sure, better fit them to cope with others in the same line of business. For those who contemplate building or otherwise improving their plant we herewith present a suggestive plan for a picker house which we feel will answer all practical purposes. This we think will handle the stock consumed by a four or an eight set mill. The proposed plan is designed in a separate building, or one connected with the main part of the mill. The building may be constructed of either brick or stone with an elevation of some 14 feet on the inside. This will give ample room when constructed in this manner for light and ventilation, which is too often overlooked in many picker-rooms.



After thus giving our ideas how a picker house should be constructed perhaps a few words how to make easy if it would not be out of place. Much has been said and is continually being said by various writers about properly prepared stock for carding and the impossibility of obtaining good results without such preparation. This is no new subject, for it is a well known fact that well scoured, softly dyed, and well opened stock is essential to good work in all the processes following. Allowing, then, that the stock has received all the necessary treatments before it is taken to the picker house, it is first taken to room No. 1, as shown in our diagram. The stock having been weighed up for the batch, it is first run

through the willow which shakes out the loose dye stuff, etc. The stock is then run through the burpicker, usually in order that all burs, sticks, shives, etc., may be extracted from the wool, which is blown through into room No. 2, soft and fluffy as down. When short and long staples are to be used together they should be well mixed. If more than one kind is to be used first weigh out the several amounts wanted of the different kinds, take them to the mixing room and spread them upon the floor in layers of about three inches thick, alternately, until the whole amount is disposed of. Wool to be burred should be bone dry, so as to make the bur hard, and more readily removed.

The matter of oiling is of much importance, and all practical mill men know the benefit of a good oil. The essentials for a good lubricant for most wools are sufficient fluidity to secure its thorough distribution, body enough to prevent its running, when the stock remains in bulk, freedom from gumminess, staying or non-evaporating qualities, and above all the absence of any ingredients that would have an injurious effect upon the fiber. We think there is nothing that will come so near to filling the requirements as good pure olive or lard oil. Of course these may be used in connection with others which can be made into a sort of emulsion. G. B.

Finishing Flannels.

It generally happens that the commoner grades of fabrics receive very little attention in textile papers. It may be because it is supposed that everyone knows how they should be handled, or it may be that it is thought they are not worth it. There is no more useful class of cloths made than all-wool flannels. They are always staple; they always command a market, and they are susceptible of receiving a very nice kind of a finish.

It may not be a bad idea to say a word or two on this subject. The early processes of burling and mending amount to very little indeed. The goods weave easily, and imperfections are not very plentiful. The first step of importance is the fulling and washing. Some men have one method here and some have another. Oftentimes the flannel is not fulled at all, merely washed. Then again it is fulled slightly and washed separately as other woolens are. But still, a third method that is sometimes followed is to practically combine the two processes so that the goods are both fulled and washed in the same machine and partly by the same process.

A flannel, from its very nature, and from the qualities which it is desired that it shall possess, cannot as a matter of course take a great deal of felting. All the felt that is required, all that could be desired, is just what is sufficient to give a degree of stability and body to the goods. If the degree of felt goes beyond this point, it makes the cloth hard and firm, and takes away its distinctive qualities of softness and pliability. The washing alone is hardly sufficient to give the body to the goods which a flannel needs to make it serviceable. A merely washed flannel tends to come out wiry and thready, that is, the threads stand out in the goods with a prominence that impairs the uniformly soft face and feel that is so much to be desired.

If the fulling and washing are to be carried out in the same machine, it is needful to make some slight alterations in the mill so as to admit of it. A fulling mill's distinctive work is of course to shrink or crowd the goods up in width and length, while a washer's distinctive province is to run the cloth in and out of a cleansing bath sufficiently often and under sufficiently slight pressure to bring about the removal of all grease and dirt and soap. The mill, to be capable of performing the washer's work, must therefore have the

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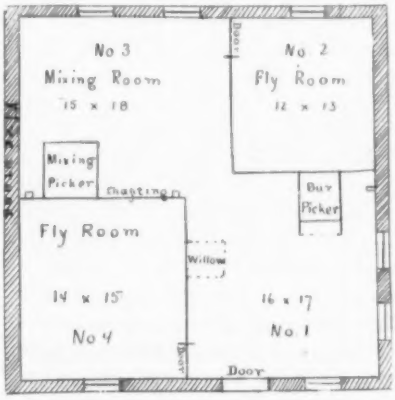

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Finishing Flannels.

It generally happens that the commoner grades of fabrics receive very little attention in textile papers. It may be because it is supposed that everyone knows how they should be handled, or it may be that it is thought they are not worth it. There is no more useful class of cloths made than all-wool flannels. They are always staple; they always command a market, and they are susceptible of receiving a very nice kind of a finish.

It may not be a bad idea to say a word or two on this subject. The early processes of burling and mending amount to very little indeed. The goods weave easily, and imperfections are not very plentiful. The first step of importance is the fulling and washing. Some men have one method here and some have another. Oftentimes the flannel is not fulled at all, merely washed. Then again it is fulled slightly and washed separately as other woolens are. But still, a third method that is sometimes followed is to practically combine the two processes so that the goods are both fulled and washed in the same machine and partly by the same process.

A flannel, from its very nature, and from the qualities which it is desired that it shall possess, cannot as a matter of course take a great deal of felting. All the felt that is required, all that could be desired, is just what is sufficient to give a degree of stability and body to the goods. If the degree of felt goes beyond this point, it makes the cloth hard and firm, and takes away its distinctive qualities of softness and pliability. The washing alone is hardly sufficient to give the body to the goods which a flannel needs to make it serviceable. A merely washed flannel tends to come out wiry and thready, that is, the threads stand out in the goods with a prominence that impairs the uniformly soft face and feel that is so much to be desired.

If the fulling and washing are to be carried out in the same machine, it is needful to make some slight alterations in the mill so as to admit of it. A fulling mill's distinctive work is of course to shrink or crowd the goods up in width and length, while a washer's distinctive province is to run the cloth in and out of a cleansing bath sufficiently often and under sufficiently slight pressure to bring about the removal of all grease and dirt and soap. The mill, to be capable of performing the washer's work, must therefore have the

pressure that shrinks the goods so adjusted by thumb screws or weights that it can be regulated, or, if need be, entirely removed. Any mechanic by looking over a mill will see how to alter the pressure cylinders so as to place them under the control of the operator. Once this change is made, then, if we desire to treat the flannel with both processes at once and in the same machine, it will be quite possible to do so.

Another feature that will be required in this sort of an operation is to arrange for the carrying off of the washing bath by making an outlet at the base of the mill. Of course this implies the arrangement also of hot and cold water pipes and valves to regulate the liquor in the mill during the processes.

The advantages in using these two processes in this peculiar way is that we get the special benefits of each process upon the goods, and get them in such a slight yet effective way that the result is most satisfactory. The cloth put into the fulling mill and regularly fulled is in great danger of being overtreated, and the slightest overfulling is going to be detrimental to the finish of the flannel. The pressure in the altered mill, as above described, is so easily adjustable that the very gentlest fulled effects can be produced, and then the washing can immediately follow without any danger of the soft and delicate feel of the finish being impaired by delay or by overwork.

The cloth is now fulled for a very short time, and then when the required felt has been produced, or rather when the wool effect has been brought out and the threadiness has been removed, all the fibres and yarns being filled out round and full so as to make the fabric soft and natural to the touch, we are ready to proceed to the washing part of the process. This is begun with the introduction of a pail full of salt solution, strong enough to enter every portion of the cloth and act upon the material to be removed. The action of this liquid in the above quantity to each piece, is to break away all the soap and dirt from the fibres and start the cleansing process. There is no danger of felting resulting from this step as the pressure has previously been removed from the cylinders and the goods run free; and three or four runs around the machine are quite enough for the goods to be penetrated and bring about the desired effects. This is all drained off now and a flow of warm water at little above 100° F., is introduced and the goods are run for, say, five minutes in this. This in turn is drained away and then cold water for further rinsing is turned on and the cloth run in it for about the same period.

The flannel is now in condition to remove from the machine and in every respect it ought to be in a satisfactory state. The solution has had the effect of cleansing and freshening up the wool, freeing it from all trace of dirt and putting it in such a condition that the action of the atmosphere or dampners cannot rob the flannel of its cleanly appearance.

After extraction, the cloth is examined and sent to the gig. The gigging will have the best effect if the flannel is dampened or sprinkled and rolled under pressure before the process is undergone. This detail will enhance the soft and natural handle of the cloth, and at the same time help very much in keeping the finish intact, once it is imparted. The desirability of a flannel finish lies not in the face appearance of the cloth, but in its full rich softness. This full feeling is very apt to wear off quickly unless it is set or fastened to the fibre by careful treatment, and this pressure, while the cloth is quite damp, seems to aid in that direction.

The gigging is short at best, some flannels indeed never being gigged at all, and the drying follows. After drying, the cloth is examined again and rolled for the market. Pressing is never practiced unless the flannel is of

the nature of a homespun suiting and these goods will require a run on the shear also to even up in some degree the long straggling fibres that may be left on the surface. MANUFACTURER.

Glass Bearings for Textile Machinery.

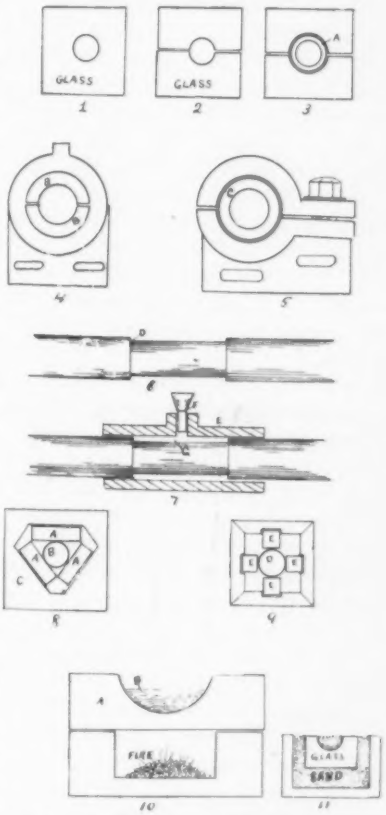
The hard, smooth surface obtained in a glass composition bearing for shafting, and some types of machinery, has induced builders of looms, carding engines and spinning frames to experiment in this line. Thus far there has been no actual application of glass bearings to any great extent, most textile machine builders being satisfied to put a glass bearing here and there for testing purposes. In some cases these glass bearings have proven satisfactory, in others quite the reverse. A good deal depends upon conditions.

For instance, a glass bearing was put upon the picking shaft of a broad loom and ran several months under tests which brought out that less oil was required, friction reduced about ten per cent., and one or two other points of advantage discovered. But a glass bearing of same style which was put upon the crank shaft and run under like conditions, proved a failure.

The bearing on the crank shaft must bear the strain of the lay, in beating up the filling, which together with the jar consequent upon the loom protecting at times, soon shattered the glass sleeves in the box bearing. This would indicate that a glass bearing may be made to give good service in a steady running shaft journal, but not in a journal which must bear jars, strains, etc.

A glass bearing on the shaft of a high-speeded fancy cylinder of a woolen card has run satisfactorily, and with little oil for a term. Some bearings tried on the slow revolving shafts of scrolls in spinning mules have also done good service without any lubrication whatever. The hard, smooth surface possible to secure with glass is of course the main reason for its value as a bearing. The smoother and harder the surface, the less the friction.

There is nothing very difficult about either making or trying the glass bearings. The writer has cast some with crude apparatus, and anyone may. The glass may be bought. There are window, flint, crystal and bottle glasses. Either window or bottle glass is best for bearings. A mixture of each is



good. There is iron, silicate of potash and silicate of lime and aluminum in bottle glass. The cheap grades are colored, and include in their composition sand, broken glass of all sort, brick dust, etc. In window glass there is a quantity of silicate of soda and alkaline matter. After securing the glass, a stone bowl arrangement like that marked *A* in Fig. 10 will be needed in which to melt the glass, as indicated at

B. The coal fire is lighted below, and when melted the glass can be ladled out and poured into the style of mold shown in Fig. II. The regular process of casting is followed. The bearing is marked "glass." Of course other shapes may be molded.

The simplest form of bearing is shown in Fig. 1, which is solid glass, with the boring for the shaft. The next style is cast in halves, making the design as shown in Fig. 2. This is a popular type for experimental purposes, as the sections need only be braced in a wooden form and attached to the right place to receive the shaft. In Fig. 3 is a sleeve, *A*, which is of glass, while the half-bearings may be iron, brass, lead, babbitt metal or wood. If wood or some soft metal is used, the glass sleeves may contact with the halves direct. If iron is used, a felt lining must intervene, otherwise the solidity of the contact will tend to crack the sleeve.

In Fig. 4 is a common style of textile machinery bearing which has been bored larger, and glass sleeve *B B* inserted. This pattern has given good results on light work, as also has the similar style shown in Fig. 5, in which the glass portion is marked *C*. Glass against glass has been tried by turning down the steel shaft, as shown at *D* in Fig. 6, and then forming a glass surfacing about it, on the plan indicated in Fig. 7, in which the process is similar to rebabbitting a shaft journal and its core. The casing, *E*, is formed about the shaft, as shown, and a tunnel, *F*, inserted, through which melted glass is poured until the space is filled and the bearing, *G*, made even with the rest of the shaft. The glass is polished on a fine emery wheel, and finally with oil and emery and run in a bearing of glass, thus making glass contact with its own kind. I have run some of these bearings successfully on light shafts at moderate speed. Some which were tried on heavy shafts next to cog wheels failed, as the glass which was molded to the shaft broke.

In Fig. 8 is an odd arrangement of bearing, in which *C* is a cast iron frame, and *A A A*, sections of glass which are set to receive the shaft, *B*, as presented. The idea is to see how little friction results. As to reduce surface contact, means only to increase the weight upon the surfaces; nothing is gained as regards saving power, but as in the contrivance shown in Fig. 9, various designs were tried for experimental purposes. In the latter, *D* is the shaft, *E E E E* blocks of glass, and *F* a frame of oak. Both these styles ran smoothly and with slight lubrication.

STIMPSON.

Uruguay Wool Exportation.

The Consul General of Uruguay to the United States, state that the shipments of wool from Uruguay to the United States during the years 1895 and 1896, was 5,330,783 kilos, valued in gold $1,184,915 in 1895, and 1,109,673 kilos, valued at $327,809 in 1896. The statement shows the shipments to have fallen off greatly in 1896,—amounting to 4,221,110 kilos, equal in value to $857,106, or in excess of 70 per cent. During the first six months of 1896 the receipts amounted to 1,094,236 kilos, value in gold $323,956; for the last six months, ending December 31st, they were 15,437 kilos, valued at $3,853. The difference between the first six months of 1896 and the last six months is shown to be over 600 per cent.

—There is a tradition at the Cape that the very first importation of merinos to South Africa did not fulfil expectations, and that the animals were all sold and reshipped to Australia, which was thus provided with an opportunity of becoming, as she did a keen competitor of the Cape in wool production.

KNITTING DEPARTMENT.

The Knit Goods Situation.

There is no use in attempting to disguise the fact that a feeling of intense disappointment dominates the market. A majority of salesmen have returned from their trips on fall goods, very few of whom have come anywhere near doing what they hoped to accomplish.

In the face of these conditions it augurs well for the future that the trade almost to a man is cheerful and confidently expresses expectations of a busy fall. Prospective tariff legislation has not caused even a ripple on the surface of the market. Buyers remind salesmen that the advance in prices of manufactured articles never keep pace with the advance in raw materials and even if they did, believe they can afford to pay more for goods after a rise has set in. Prices seem to offer little inducement, concessions usually being ignored.

People are not ready for the goods, or more bluntly speaking, they have not the money to buy them. Stocks between the factories and consumers have been somewhat under-estimated, but there has been far greater miscalculation in over estimating the necessities of the trade. Economy has been forced upon the masses and few channels of family expenses have been compressed more severely. This, perhaps, because underwear and hosiery (barring that worn by children and soubrettes), do not undergo public scrutiny.

Duplicate requests are stringing along with frequency as might be expected from the small original orders and promise to be well maintained for many weeks to come. The filling of these driblet orders, however, will be attended with great inconvenience to jobbers and manufacturers, particularly with a market of upward tendency following tariff changes. One of the greatest errors has been made in expecting that much of the shrinkage in orders of last season was to appear in increased demands for fall weights, when as a matter of fact consumers who in better times would have ordered new goods, tided over the emergency by making the old ones answer.

Cheap goods continue to have the call. In hosiery, for instance, some printed patterns that would ordinarily be passed with a glance, appear to be meeting with a sizable demand. The market is absolutely devoid of speculative features. Foreign goods are being received in extra large quantities to escape tariff enactments and serve to depress everything appreciably.

It is an uneven market withal. While most mills are complaining, some are evidently well employed, but except here and there at unprofitable prices. The tendency in hosiery is surely toward high colors, which too often accompany cheap grades. This for the dark side of the picture. No one is disposed to discount the future, yet I did not find one New York knit goods man, in making thirteen calls last week, that did not say these words, or their equivalent, "Don't worry, we are going to have a good trade in the fall. All the goods on hand and more will be wanted."

By the foregoing it should not be inferred that knit goods exchanges have not shown a marked increase in volume the past month. They have. It is only when the record of sales is compared with past seasons, and by the totals they were hoped to reach after a peculiarly depressing period, that the full measure of disappointment is apparent.

Combination Underwear.

Quite recently, a settlement in a very noted patent case was obtained in the United States Court, concerning the validity of an invention and the rights of the holders of the letters-patent thereon, regarding certain improvements in combination under-garments. The patent is one that has been referred to as the "Frey Patent," from Andrew Frey, of Utica, New York, who secured his letters-patent in the early part of 1893. The patent relates to fastening diagonally across the chest, instead of laterally. The combination suits made under it possess many advantageous features, and because of their superior fit and comfort in wear, the trade has regarded them with favor. Because of their favorable reception by the trade, a number of manufacturers, without proper regard to the rights of the patentee, have undertaken their manufacture. It was because of these infringements that the case was carried into court, with the result of the decision being in favor of the holders of the patent, who have now the exclusive right of manufacture and licensing. Since the decision of the court, all manufacturers, other than the owners of the patent, making this style of suit, are working under a license.

The interest that has been taken in the case prompts us to refer to it at this time, with a description and illustration of what the patent covers.

As is well known, the ordinary undershirt is open at the bottom and is slipped over the head of the wearer, the neck opening being made just large enough to enable this to be done easily, and owing to the small size of the head with relation to the shoulders of the wearer, the slits and overlapping flaps of the garment are of moderate dimensions. But when it comes to the making of a high neck union knit under garment, which, on account of its structure, cannot be drawn on over the head, but the body of which must be drawn up over the hips, it has heretofore been thought absolutely essential to divide the body or waist part of the garment all the way down the front, from the neck to the crotch of the legs, in order

that a sufficiently large opening might be had in the top of the garment. As a result, facing pieces of great length are employed, which involves expense in manufacture and liability to tear and wear out. Furthermore a great number

of buttons must be used, which are not only inconvenient on account of the time consumed in buttoning and unbuttoning, but which are apt to be lost and which are a serious source of discomfort and even of injury to the wearer when the buttons are pressed against the sensitive flesh under tight-fitting corsets. The number of buttons and button holes necessary involve considerable expense in making and applying. Even when made in the best manner, also, it is impossible to secure a perfectly glove-fitting garment with this structure. The stiff facings are apt to pucker and mount in ridges, which are a disfigurement as well as a discomfort; such a garment is also difficult to draw on and to take off.

The invention in question has for its object, therefore, the provision of a high neck union under garment, the waist or body of which is solid knit goods unbroken by vertical slits or facings, and which shall yet be capable of being drawn on over the hips of the wearer.

This can be seen by referring to the accompanying illustrations. Fig. I. is a view of the upper portion of the body of the improved garment as it comes from the knitting machine, and before it has been cut to fit the neck and to receive the sleeves. Fig. II. is a similar view, showing how the front and back of the body are cut away previous to the putting on of the sleeves. Fig. III. is a similar view, showing the complete garment. Fig. IV. is a vertical sectional view through the shoulder of the garment.

Usually the body (1) of the garment is knit up to a point level with the shoulder or substantially so and the upper edges are then trimmed to fit the neck. Seams are run along the tops of the shoulders, and a vertical slit is made down the front from top to bottom of the body, which is protected by suitable facings and provided with buttons and button holes. In knitting the garment in question, however, the body 1 is knitted both at front and rear considerably above the line X, which represents what will be the tops of the shoulders and the top line of the sleeves. As it comes from the knitting machine, the body of the garment has at top the form shown in Fig. I. The front of the body is cut away straight across, as shown at 2 in Fig. II., except for a slight curve at the centre (3) which allows for the curve of the neck of the wearer. The back is next cut away, as shown at 3^a in Fig. II., so as to leave on each side of the cut away section inclosed by the dotted lines the two flaps 4 4, which, as will be seen, are of knitted material, continuous with the back of the garment. Fig. II. shows the garment after these cuts have been made and the edges bound and ornamented. These flaps are then turned down over the breast, as seen in Fig. III., and thus form elastic shoulder pieces, which are worn with great comfort and which have no seams or buttons on the tops of the shoulders to annoy the wearer. The sleeves are then applied. The lower edge of each shoulder piece, or flap, 4, forming one wall of the respective shoulder openings, is made comparatively inelastic, so as to afford support to the shoulder parts in a lateral direction, when the flaps are closed; but by the construction shown, when this comparatively inelastic wall of each shoulder opening is free, it is thrown out of the circumference of the elastic opening through which the body is passed. To provide these comparatively inelastic lateral stays forming one wall of each shoulder opening and means for opening and closing the shoulder openings, as shown at the lower edges of the shoulder pieces 4 4, short horizontal facings 5, which have suitable button holes and immediately under such lower edges the top of the body 1 is protected by short elastic bands or facings 6, and provided with buttons 7. When the garment is to be put on, the flaps 4 4 are unbuttoned, and the neck of the

garment presents then an elastic opening all around, which may be readily drawn on by the wearer. A garment constructed in this manner is neat in appearance, protects the chest and presents no buttons to abrade or injure the skin.

Washing Underwear Knit Goods.

Let me say, while other parts of a knitting mill have from time to time been carefully and well written up in the textile journals, the washing of the goods has been neglected. Whether those who seem to know, or rather pretend to know all about it, are afraid to give their ideas away, I cannot say, but an exchange of views on such an important branch of the knitting industry might be of great benefit to knitters in general. I know many need instruction in this matter, for I have been lately called to two different mills to show and to teach them how to properly clean and wash the different shades and grades of goods, for great care must be exercised in the wash room. Goods of various mixtures and shades require different treatment. It is not, and should not be expected that the same quality of alkalization, soaps, etc., will accomplish the like results on animal and vegetable fibres. I have seen men who really thought their goods were perfectly washed and rinsed, but when they were finished, coming out of a hot press, they would smell badly of animal grease, and often rejected by the buyers, while the vegetable matter would be perfectly clean. How did this occur? Simply by following some old method. If a man understands his business properly he will not get caught this way.

I have known some manufacturers putting a common laborer in the mill to wash the goods, giving him a few instructions, and taking it for granted that he was economizing, because he could get the washing done for a little less money, with bad results following. I mentioned in your journal in 1891 of a heavy failure from such a cause, and only last week I learned of another large knitting mill meeting with heavy losses from goods returned, because of defective cleansing. A mixture of wool and cotton may be made perfectly clean without any trouble by following the remarks I gave on fulling, washing, etc., in your journal in 1893.

To get a uniform strength of liquor for washing, which is necessary for different lines of goods, weigh and measure all stock used before putting it into the liquor tank. The latter should be of good size, so that the liquor may not boil over while cooking it. It is preferable to melt the stock with dry steam, than by one opening direct into the tank, which scores of mills use. Instead of this, use a coil, by placing it in the bottom of the tank. This is the correct and best method, for water or condensed steam dilutes the soap, etc., and its strength is not uniform. When the required strength of liquor is obtained, and the goods perfectly clean, one may have to test the same in different ways, until each grade is properly got. Then keep a note of the same, so that when changes occur in a mill you will be able at once to wash the goods as they should be. Sometimes the relative proportions of alkalies, soap, etc., may have to be varied, according to the class of goods made.

To find the cost of goods washed: In using the liquor from the tank, first find out how many gallons of water it will hold; then get the piece of stock and see how much per gallon it costs, with the extra gallons the stock has made, and with a gallon measure you can readily find out how much dry soap, alkalies, etc., is used to wash a certain quantity of goods.

If the liquor appears watery while washing, the possibilities are, more liquor is required. The lather should never be let to die until the goods are ready to be rinsed, which may require from 15 to 20 minutes; but all practical

men know that the time required for washing depends greatly on the grade of goods and quality of stock, besides this, temperature of the liquor. Every washer should know whether the water he is using is hard or soft. I will relate a circumstance which came under my observation. James Wright, of Manchester, England, an A 1 finisher of shawls and broadcloth, came to this country some time ago and secured a good situation as overseer of finishing in one of the leading mills in this country. He came to me one day and told me he felt very badly because he could not get as good a finish as he desired on a certain line of cloth, saying he had tried everything possible. I said to him, I expected such would be the case. "Why?" said he. I told him the trouble was in the water. At this he was astonished. The reason I gave was that two large rivers joined each other a little distance above the mill, the one coming direct from the North, the other from the West, and these two waters did not mingle together until they had travelled quite a distance, something similar to the Gulf Stream that I had looked upon in the Atlantic Ocean. The point is, you should know how to test hard and soft water.

OLD SUPERINTENDENT.

Rule for Counts of Yarn for Knit Goods.

Editor Textile World:

I was much interested in the large number of answers to my question of two months ago for a rule how to order a certain number of yarn for a certain weight of goods, and it seems that knitters have no rule and have to rely on their own judgement and past experience. But some of them seem to think there ought to be some way of knowing just what they want and even admit that it is possible to get up such a rule. Now I should like to ask some of the spinners what their expericnce has been in knitting mills under this system, and if it is pleasant to have the knitter tell him that his yarn is too light or to heavy when he knows it is all right. Come, spinners, speak out on this matter so that we may find out where we are at.

Cohoes, N. Y. T. H. C.

The Knitting Gauge.

In reference to gauges, which subject has been discussed in these columns, permit me to say, old knitters differ in their explanations, but the following is about the fact:

Twenty gauge would be twenty leads in three inches, with two needles to each lead, which would be forty needles in three inches: $40 \div 3 = 13\frac{1}{3}$, or what we would call fourteen needles per inch. As for the number of stitches per inch, that would be governed by several things; size of yarn, tension on the yarn, how slack or loose the goods were knit, etc. Unless one has measured the stitches and has put the machine in the same condition, and uses the same sized yarn, it must be guess work. This under ordinary conditions, with fair work, fifteen needles to the inch on circular work, would give about twenty-three or twenty-four stitches per inch. G. B.

—In cotton hosiery the demand for fine-gauge goods has been fair, while coarse gauges have not been called for as much as during last season.

—In fleeced hosiery, maco feet and herringbone soles will be good sellers for the coming autumn season, as they are comparatively new, and there were only a few lines in the market last year.

—The Chemnitz exporting houses, have formed a ring to keep up the hosiery business and prevent factors selling direct to the American importer.

—In cashmere hosiery, the orders placed with chimnitz manufactures are mostly for better grades. The very lowest grades have not been able to compete with American makes.

POWER DEPARTMENT.

O. R. YOUNG, M. E., Editor.

The New Bedford Boiler Explosion.

New England added another to her record of diastrous boiler explosions on Feb. 27, the scene of the disaster being the Acushnet Mills at New Bedford, Mass.

The Mills started up as usual and every thing spun along just as it had for the past fifteen years. Eng. John King stood in the engine room talking with two men who were repairing a section of the engine house wall. Suddenly the very earth seemed to crumble and a deafening roar was heard. The boiler room door flew open almost pinning one of the men to the wall, houses were rocked on their underpinnings windows crashed and doors flew open, people rushed panic stricken into the street, wholly unable to account for the singular disturbance. Great volumes of steam and smoke rose over the Mills and before any one could realize what had occurred the big engines slowed down and stopped.

In the harness room two employees, Geo. Howard, the overseer, and Arthur Aspin stood talking as the explosion occurred. Howard was blown through a window into the cloth room.

GENERAL VIEW OF THE WRECK.

landing on a pile of debris, cut, bruised and scalded. Aspin was buried in the ruins, his blackened and dismembered body being taken out some hours later. In the cloth room the first warning was the sight of the whole east wall moving inward bodily. The employees were almost all girls, many of whom suffered from scorched cloth ing and cuts from flying glass. Two fire alarms were sounded calling out the entire fire department, which rendered valuable assistance in re-

moving the killed and wounded. Among the former being Manuel Medeiros Matthias, boss fireman, and Arthur Aspin, harness repairer. Among those badly wounded were John King, engineer; Manuel Medade, fireman; Edward Sylveiria, coal wheeler; Joseph Lambert, Manuel Enos and Geo. Howard.

A piece of one of the exploded boil

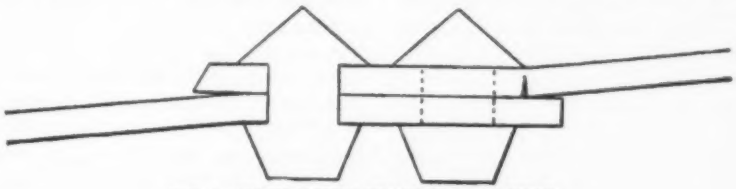


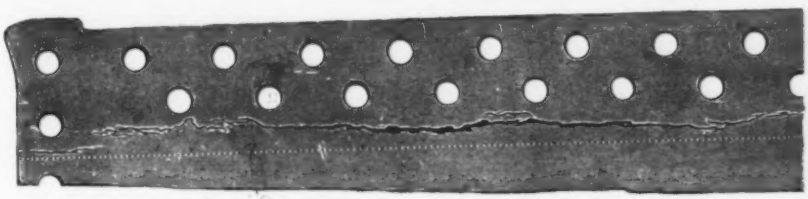
FIG. 2.—WHERE THE FRACTURE STARTED.

ers shot high into the air, clearing the three story main mill, and landed on the roof of the South Police Station, a quarter of a mile away, completely wrecking the upper story of the building, and injuring some painters who were at work on the station.

Another section of the boiler drove through the west wall of the Picker House tearing out a hole ten feet wide and extending through the second and third stories.

room. With the exception of a hole in the picker house and the shattered glass in the main building, the boiler house, pump and cloth house buildings, were the only ones destroyed.

The boiler house contained a battery of twelve horizontal tubular boilers, 72" by 16 feet, rated at about 150 horse power and arranged on the east and west side of the central stoke floor, six on a side, all joined to one steam pipe. Ten of the boilers were built at the Robinson Works in 1882, the remaining two being built by the Cunningham Iron Works Company, Congress St., Cor of B. St., South Boston, and were put in, in 1890. They were supposed to be in good condition and were inspected and insured in the Boston Mutual Boiler Insurance Co. Which carried policies aggregating 14,000 on the plant. The safety valves

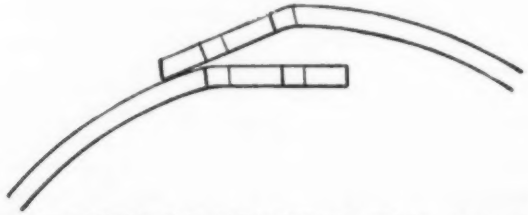


A PLATE DESTROYED BY A HIDDEN FRACTURE.

The boiler room was located in the south half of a two story building, forming an L of mill No. 1 about half way down the yard. Adjoining it at the west, was a small one story pump house and still further west, the big cloth room building, one story high and several feet in length. The cloth room building occupied the centre of the court yard between the main buildings of mills No. 1 and 2. The eastern half was used as a harness

were set to blow at 94 pounds and engineer King stated that the gauges registered 93 pounds just before the explosion. As soon as practical after the explosion a thorough investigation of the cause was made by the Inspection Dep't. of the State District Police, assisted by the insurance men and boiler experts, who unanimously decided that it was the explosion of one of the two Cunningham boilers which caused the disaster. Examination showed

that the break was almost identical with that of the explosion at the Langley Factory, Fall River in June, 1895, which boiler was made by the Cunningham Company. It was shown that the boiler parted in a horizontal seam of the middle sheet, close to the rivet-holes and under the lap, and that the fault was owing to a crack in the plates under the outer edge of the rivet heads, which may be seen by referring to the accompanying cuts. The "Locomotive" speaking of this class of fracturers, says:—"Most of the fractures of the plate are undoubtedly due to the bending of the plates in the rolls. From thirty to forty per cent. of the sectional area of the plate is removed, along the line of the joint, by the act of punching or drilling the rivet-holes; and when the part that is thus weakened is passing through the rolls, the curvature of the plates at this point is sensibly increased, owing to the greater readiness of the weakened spot to yield to the stress imposed by the rolls. The sharpest bend will usually occur, too, along the inner row of holes, because here the rolls have a greater leverage than they have along the outer row. Fig. 1 shows the effect of this action, on an exaggerated scale.



FIF. 1.—SHOWING THE ACTION OF THE ROLLS. (Exaggerated.)

When plates thus affected are brought into position for riveting, they will not lie closely, but have to be knocked together with a sledge, or forced together hydrostatically, before the rivets can be driven. This means that there is a severe local strain left in the plates, the effect of which are likely to become visible, at some time in the subsequent history of the boiler. When the joint has been riveted up, the parts of the plate that lie under the heads of the rivets are held together so firmly that the yielding action that occurs in every boiler as the pressure and temperature vary, will not be felt at this point, but will be transferred to a line lying at, or just beyond, the edge of the rivet heads, as shown in Fig. 2. In the course of time these slight changes of form, when combined with the stress already existing along this line from the cause just described, are likely to develop a crack starting from the inside surface of the outer plate, at a place completely hidden from view, and extending insidiously outward, until the final rupture of the plate is accomplished, and the boiler gives way in a violent explosion."

This class of fracture from the very fact that it is hidden under the lap of the seam makes it impossible to discover the same by any ordinary inspection even hydrostatic test would probably not discover it unless it was far enough developed to break away under the pressure.

It is extremely gratifying to find the elements of mystery eliminated from this explosion and to know that the catastrophe was not due to any ignorance or carelessness on the part of any employee.

The Heintz Steam Trap.

Manufacturers all over the United States have been looking for years for something in the line of an expansion trap which would work. The great trouble with many having been, that

while they might work fairly well when first installed, the continual expansion and contraction of the metal soon wore them out. This fact being realized by inventors they turned their attention towards constructing something which would be more durable. For several years the Heintz Steam Trap has been employed extensively by steam users throughout the continent of Europe, and has apparently accomplished the long sought for result, as there are, now, over 50,000 in use.

In October, 1896, the introduction of the Trap into this country, was made by William S. Haines, of 132 South Fourth St., Philadelphia, Pa., and the rapidity with which it sprang into favor, is an evidence of the excellence of the Trap. Why it should find favor among those having a personal knowledge of mechanics is readily understood from its construction as shown by engravings. The inlet is at *A* and the outlet at *B*. The semicircular tube spring holds the valve ready to act, and by means of the regulating screw *C* adjustments can be made. The tube spring is partly filled with a liquid, the composition of which M. Heintz alone knows. It has certain remarkable properties, inasmuch as it is so sensitive to the action of heat that it seats and unseats the valve in less than a second.

When the trap is in position the valve remains wide open until the requisite heat reaches it, when the fluid in the tube spring expands and fills the tube, the temperature for this being 194° to 197°; as the heat rises beyond that point the tube spring forces the valve to its seat, and at 212° it is shut tight. With the valve closed the condensation accumulates and the temperature of the tube spring falls a little. As soon as it reaches 211° the valve opens sufficiently to permit the condensation to pass off, but the instant steam comes the valve closes again.

By means of the regulating screw, *C*, it is possible to secure a variety of performances that are unique with the Heintz trap, as, for instance, if it is desired to elevate the discharged water, a slight turn of the regulating screw, withdrawing it as far as necessary for the height to which the water is to be raised, will make the trap keep dry steam within three or four inches of the valve, while the condensed water is being discharged into an elevated tank, the height of which can be determined only by the steam pressure on the boiler, or if it is desired to circulate water under pressure at a higher temperature than 212°, this can also be accomplished when the regulating screw is set at the point desired to maintain the pressure water at any temperature wished for.

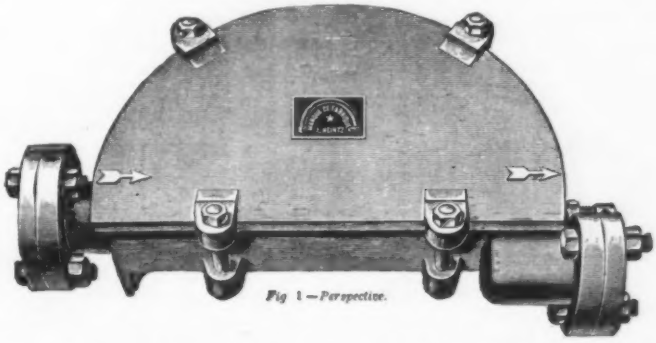


Fig 1.—Perspective.

A number of these traps are used in sugar refineries and elsewhere for circulating water at 240° temperature, which it does with the same accuracy that it traps the condensed water off steam, stopping the flow at 241°, and passing it again at 240°.

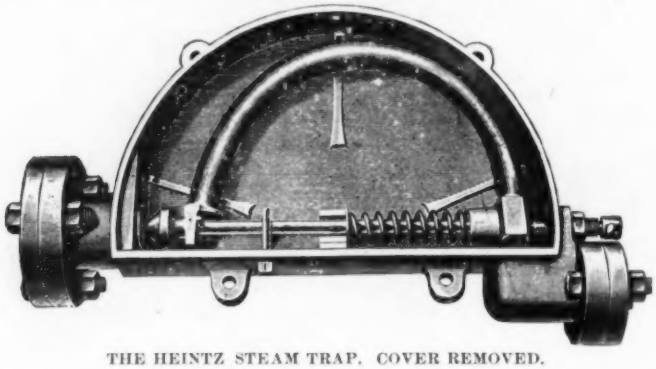
In operation, the trap is so sensitive that a practically continuous flow is observed. The tube spring moves a sufficient distance in all sizes of traps to insure a wide open valve when the temperature of the water passing through does not exceed 197°, as it is quiescent until that temperature has been reached. Between that point and 212° it is slowly moving the valve toward the seat.

If the outlet from the trap is on a level or lower than the inlet there is no possibility of a freeze up, nor can grease or oil from the engine or apparatus to which the trap is attached by any possible means affect its successful operation. There is no pressure in the trap when at work, and it is blown out steam pipes when steam is first turned on. It is without air valves or pet-cocks, and has no screws, rotating parts, levers, floats or similar appliances. It is perfectly automatic in its action, and no part of the trap is subject to rapid wear or derangement. This company also manufacture the celebrated Heintz thermo-regulators.

The rate of combustion in a furnace should not exceed 0.3 pounds of coal per hour for each square foot of heating surface, unless the quantity of steam is of more importance than economy of fuel.

* * *

All openings for admission of air to



THE HEINTZ STEAM TRAP. COVER REMOVED.

through and cleared of deposit each time it is worked. The trap is so regulated that at starting, the valve is wide open, and does not close until all the air and water are blown out, and until the steam itself actually arrives. The force by which the valve is actuated, in either direction, may be judged from the fact that the strength of the spring tube is sufficient to close the valve and keep it tight against a pressure of 200 pounds.

Among other claims made for this trap are, that it will trap air with absolute certainty, and works identically the same, without regulating, at all pressures. That it is wide open at 195°. It has a throughway the full bore of its valve, and consequently it serves to thoroughly and quickly blow

the boiler or flues, except through the fire, should be carefully stopped. They are frequently an unsuspected cause of serious waste.

* * *

Bad setting for a boiler has been known to result in a loss of 21 per cent. in economy.

* * *

Most of the abuses in steam engineering have arisen from two causes. Avarice on the part of men who are imbued with the idea that cheap boilers and engines are economical and can be operated by a class of men who will work for lowest wages, and ignorance on the part of those who claim to be engineers but at best simply know how to start and stop their engines.

COLORS AND DYEING.

Dye Recipes for April.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $3.

RECIPE NO. 49.

Violet on Cotton Yarn.

Rhoduline Violet on 100 lbs. cotton yarn:

Mordant the yarn in the usual way with

1 lb. Tanic Acid.
1 lb. Tartar Emetic.

Rinse off and dye with

4 oz. Rhoduline Violet.
(Farbenfabricken of Elberfeld Co., 77 William St., New York.)
1 lb. Acetic Acid.

Enter in yarn in dye bath cold; bring temperature up to luke warm while turning, and turn to shade at that heat.

A very fine range of shades can be dyed with Rhoduline Violet, beginning with a light shade of heliotrope or lilac, down to a dark shade of violet. As the colors, like the Rhoduline Reds, are fast, they will combine together and the dyer will have no trouble to get a required shade.

RECIPE NO. 50.

Dark Blue on Cotton Yarn.

Dark Blue on 100 lbs. cotton yarn:

Prepare dye bath with

3 lbs. Erie Blue G G.
(New York & Boston Dyewood Co., 55 Beekman St., New York.)
20 lbs. Glauber's Salt.
2 lbs. Sal Soda.

Enter in yarn at boil, and turn one hour at that heat.

The above shade, with Erie Blue G G, while being a dark and at the same time a bloomy one, will combine excellently with Columbia or Sambesi Black, for producing dark blues. It cheapens the color considerably when combined with them. It is fast to alkali and acids.

RECIPE NO. 51.

Terra Cotta on Worsted.

Terra Cotta on 100 lbs. worsted yarn:

Prepare dye bath with

4 lbs. Terra Cotta.
(Bosson & Lane, Boston, Mass.)
4 lbs. Oil of Vitriol.
10 lbs. Glauber's Salt.

Enter in yarn at 130° F.; bring temperature up to boil while turning, and turn to shade at that heat.

The above shade is an extra full and at the same time a brilliant one. Terra Cotta produces very evenly dyed shades on the fibre. It works slowly, and at the same time penetrates the thickest of goods. It is fast and does not rub off, and will combine readily with other acid anilines and extracts.

RECIPE NO. 52.

Medium Blue on Worsted.

Chrome Blue on 100 lbs. worsted yarn:

Mordant for one hour at boil with

2½ lbs. Bichromate of Potash.
1 lb. Galaxy Acid.
(John J. Keller & Co., 104 Murray St., New York.)

Wash and dye with

1 lb. Chrome Blue 2 B.
(John J. Keller & Co.)
1 lb. Acetic Acid.

Enter in yarn at 150° F.; bring to boil while turning, and turn one hour at that heat.

On light or dark dyeing the Chrome Blues are very well adapted, on account

of their working on the fibre slowly. The dyer will always produce the same shade when a certain amount of color is used, on account of the Chrome Blues being in powdered form. (See Recipe 42.)

RECIPE NO. 53.

Light Blue on Cotton Yarn.

Light Blue on 100 lbs. cotton yarn:

Prepare dye bath with

1 lb. Diamine Sky Blue.
(W. J. Matheson & Co., Ltd., 178 Front St., New York.)

3 lbs. Fankhausine.
(Nashoba Co., Ayer, Mass.)

10 lbs. Glauber's Salt.

Enter in yarn at boil, and turn one hour at that heat.

In dyeing cotton or wool Fankhausine will be found to be very useful. It will cause a saving in dyestuff and labor, and also leaves the goods in a fine, soft and silky condition.

RECIPE NO. 54.

Pink on Cotton Yarn.

Erika Pink on 100 lbs. cotton yarn:

Prepare dye bath with

1 lb. Erika 4 G N.
(New York & Boston Dyewood Co., 55 Beekman St., New York.)

20 lbs. Glauber's Salt.

1 lb. Sal Soda.

Enter in yarn at boil, and turn one hour at that heat.

Erika 4 G. N. dyes a fine shade of fast pink, which will resist acids, bleaching and hot ironing. It does not rub off, and dyes very level on the fibre.

RECIPE NO. 55.

Dark Blue on Worsted.

Chrome Blue on 100 lbs. worsted yarn:

Mordant for one hour at boil with

2½ lbs. Bichromate of Potash.

1 lb. Galaxy Acid.
(John J. Keller & Co., 104 Murray St., New York.)

Wash off and dye in a bath of

1 lb. Chrome Blue P. E.
(John J. Keller & Co.)

1 lb. Acetic Acid.

Enter in yarn at 150° F.; bring up to boil while turning, and turn one hour at that heat.

Chrome Blues are fast gaining the favor of dyers, as the dyer will surely get the same shade each batch when the same amount of color is added to the dye bath. Chrome Blues are fast to fulling and light, and combine with fustic and logwood extracts. (See Recipe 46.)

RECIPE NO. 56.

Dark Seal Brown on Worsted.

Dark Seal Brown on 100 lbs. worsted yarn:

Mordant for 1½ hours at boil with

3 lbs, Bichromate of Potash.

2 lbs. Tartar.

Wash and dye with

5 lbs. Anthranine Yellow.

10 lbs. Alizarine Violet.
(E. E. Atteaux & Co., 174 Purchase St., Boston, Mass.)

3 lbs. Acetic Acid

Enter in yarn at 160° F.; bring to boil while turning, and turn to shade at that heat.

A full, dark shade of seal brown is shown above, produced with two colors, and can be changed either to a yellower or redder shade by varying the amount of violet or yellow.

RECIPE NO. 57.

Light Brown on Cotton Yarn.

Cachou De Lavel on 100 lbs. unbleached cotton yarn:

Prepare dye bath with

1 lb. Cachou De Lavel.
(Sykes & Street, New York.)

4 lbs. Carbonate of Soda.

4 lbs. Common Salt.

Enter in yarn at 130°; bring temperature up to 140°, while turning slowly, and turn one-half hour at that heat; lift out, wash and turn for 20 minutes at 160° F. through a bath of

2¼ lbs. Bichromate of Potash.

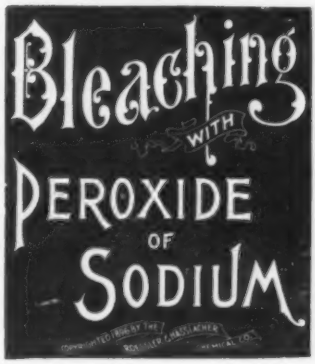
4 lbs. Oil of Vitriol.

Wash and dry.

Cachou De Lavel is a well known color on the market, as most every dyer of cotton uses it on account of its fastness to all tests and the number of shades it will dye, with different treatments. This color also acts as a mor-

BLEACHERS:

Having started our Peroxide Works at Niagra Falls, we are prepared to execute the largest contracts promptly, and at greatly reduced prices.



Write for pamphlet on:

THE ROESSLER & HASSLACHER CHEMICAL COMPANY,

73 Pine St., New York.

dant for other anilines. The color works very evenly for light or dark shades, and by combining it with Thio Catechine and Vidal Black, sold by the same firm, a very pretty range of colors is made, which are very fast.

RECIPE NO. 58.

Medium Blue on Worsted.

Azo Acid Blue on 100 lbs. worsted yarn:

Make up dye bath with

2 lbs. Azo Acid Blue B.
(Victor Koechl & Co., 79 Murray St., New York.)
4 lbs. Oil of Vitriol.
10 lbs. Glauber's Salt.

Enter in yarn at 140° F.; bring to boil while turning, and turn to shade at that heat.

Azo Acid Blue B, as well as Azo Acid Blue G, are well known colors among dyers, and are used largely on account of the brilliant shades they produce. They combine with other acid colors, and work level. They are fast to washing, do not rub off, and are very soluble and easily worked.

RECIPE NO. 59.

Yellow Brown on Worsted.

On 100 lbs. worsted yarn:

Mordant for 1 1-2 hours at boil with

2 lbs. Bi-chromate of Potash.
1½ lbs. Tartar.

Wash and dye with

4 oz. Alizarine Yellow, powd., Patd.
2 oz. Alizarine Green, powd., Patd.
2 oz. Alizarine Red W., Patd.
(C. Bischoff & Co., 87 Park Place, New York.)
1 lb. Acetic Acid.

Enter in yarn at 130° F.; bring up to boil while turning, and turn to shade at that heat.

We show a shade of brown dyed with a combination of Alizarine Red, Alizarine Yellow and Alizarine Green. These colors combine readily together for both light and dark shades, and by using the above three colors in different proportions, any required shade can be produced. (See Recipe 19.)

RECIPE NO. 60.

Blue Black on Worsted.

Blue Black on 100 lbs. worsted yarn:

Mordant for 1 1-2 hours with

3 lbs. Bichromate of Potash.
2 lbs. Tartar.

Wash and dry with

8 lbs. Solid Extract Logwood N.
(Stamford Mfg. Co., 133 Front St., New York.)

Enter at boil, and turn one hour at that heat.

Solid Extract of Logwood N is a new product, and by the richness and bloomy shade produced, with the above amount, proves that it is a desirable extract. It will be found not only suited to dye black, but can be used along with Alizarines and other chrome colors, for mode and other shades.

RECIPE NO. 61.

Medium Brown on Cotton Yarn.

Cachou De Laval on 100 lbs. unbleached cotton yarn.

Prepare dye bath with

10 lbs. Cachou De Laval;
(Sykes & Street, New York.)
5 lbs. Common Salt.
7 lbs. Carbonate of Soda.

Enter in yarn at 130° F., bring temperature up to 140°, while turning, and turn one-half hour at that heat. Lift out, wash, and turn for twenty minutes at 160° F., through a bath of

3 lbs. Bichromate of Potash.
5 lbs. Oil of Vitriol.

Wash and dry.

Cachou De Laval will produce slightly different shades when sprung with Sulphate of Iron to which Oil of Vitriol is added. A large range of shades can be dyed from Cachou De Laval by different treatments in the fixing bath. In adding the color to the dye bath, it is better to add separate portions.

RECIPE NO. 62.

Orange Red on Cotton Flannel.

Alkali Red on 100 lbs. cotton flannel:

Start a bath by dissolving

1 1-2 lbs. Alkali Red.
(A. Klipstein & Co., 122 Pearl St., New York.)

In 50 gallons hot water with 2 gallons of Caustic Soda lye, 60° Tw.

150 lbs. salt.

When dissolved, add enough water to make a 100-gallon bath.

Enter in cloth, run 1-2 hour at 180° F. and rinse well in cold water, and squeeze while washing.

The above quantity is for starting bath; use 1 per cent. for standing bath.

Alkali Red dyes perfectly even on the fibre and is fast to washing. Fine shades of pink can be made by using small amounts of dye-stuff. (See Recipe 40).

RECIPE NO. 63.

Green on Cotton Yarn.

Diamine Green on 100 lbs. cotton yarn.

Prepare dye bath with

3 lbs. Diamine Green B.
(Wm. J. Matheson & Co., Ltd., 178 Front St., New York.)
25 lbs. common salt.
1 lb. sal soda.

Enter in yarn at boil and turn one hour at that heat.

Diamine Green B. as shown above, dyes a very heavy and blooming shade. The importer has also another green, called Diamine Green G., which is more yellow. This is a fast color, quickly and cheaply applied.

RECIPE NO. 64.

Medium Blue on Worsted.

Naphtazine Blue on 100 lbs. worsted yarn.

Prepare dye bath with

3 1-2 lbs. Naphtazine Blue O.
(Victor Kœchl & Co., 79 Murray St. New York.)
4 lbs. Oil of Vitriol.
10 lbs. Glauber's Salt.

Enter in yarn at 140° F., bring temperature to boil, and turn to shade at that heat.

Naphtazine Blue O is a well known color, and is largely used where fast blues are wanted. By passing it through a chrome bath after dyeing, extra fast shades will be the result. It will combine with other acid dyes and works very slowly and evenly on the fibre. It does not rub off, and will stand washing and fulling.

Recent Dyes.

We present in our dyeing recipes this month some new colors, in which our readers will be more or less interested, and which have not heretofore been described. In recipe No. 60 will be noticed the use of solid Extract of Logwood N, supplied by the Stamford Mfg. Co., New York. We direct attention to the recipe and remarks of our dyer.

In recipes No. 57 and 61 will be observed the use of Cachou De Laval, furnished by Sykes & Street, New York. This color being a mordant, various shades can be obtained by topping with

aniline colors. It may be well to inform dyers that the packages containing this color must be kept tightly closed, as the color deteriorates upon exposure to the air. It is applied to cotton. Only dissolve enough for present requirements. The dye bath should be as short as possible (about ten to fifteen times the weight of the cotton, and the temperature about 140° F.). Pour the dye solution into the bath through a sieve, in several lots. On no account must this solution be added in one lot.

Color in the Textile Art.

Color plays a most important part in the decoration and design of all the varieties of textile fabrics. By far the larger proportion of textile fabrics owe much of their beauty to the use of color in their production. Of late years the great development which has taken the place in the arts of textile coloring, the greater variety of dyes now available, the introduction of new chemicals for use as mordants, etc., and the invention of new methods of dyeing and printing, have done much to enable the colorist to produce a greater variety of effects than he was able formerly to do. Hence we find now in textile fabrics a greater variety of color effects, many of a most beautiful character, than used to be the case.

What is color? is a question, remarks a writer to the Dyer and Calico Printer, that has been asked many times and will probably be asked many times again, as long as man remains an inquisitive being, and desires to get at the bottom of things. That color has some relation to light is a well-known fact. The colors of natural objects disappear as the sun goes down to the horizon at night to reappear when it rises again in the morning. What is there in light to enable it to bring out color? Sir Isaac Newton showed that when a beam of light was passed through the angle of a glass prism it underwent two changes, first it was bent or refracted out of its course, secondly it was widened out into a band, not of white light, but of colored lights arranged in the same order as in the rainbow. This is the spectrum.

Now it is considered that light is the result of vibrations or waves which occur in an hypothetical substance known as the ether, which is supposed to permeate all space and all objects and to be co-extensive with the universe. When this ether is caused to vibrate at a certain rate it gives rise to the sensation of light, according to the rate of vibration, or in other words, the wave length. In this way the various colors are produced; red has the longest wave length and violet the shortest wave length of any of the colors; or, put it in another way, there are more waves or vibrations in a given time in the case of violet than in the case of red light.

When light strikes a body a portion is reflected and a portion is absorbed, the proportion depending upon the substance and its physical structure; some bodies reflect more rays than they absorb or transmit, while with other bodies the opposite case prevails. But bodies have not only a reflective or absorptive effect on the light which falls upon them, they have also a selective effect, and upon this latter depends their color. If they pass on in any way the waves of light in much the same proportions as they receive them then they will appear white, if they do not reflect much and absorb all the colors in which they are present then they appear black. If they absorb some and reflect others then they appear to be colored, the particular color depending upon the waves of light which are reflected or transmitted; thus a red body reflects chiefly if not entirely the red waves while absorbing the others; a blue body similarly reflects chiefly the blue rays while absorbing the red, yellow, green, and violet rays; and so on for other colors. Colored bodies owe their color to the fact that they ex-

ert a selective action on the waves or rays of light which fall upon them, allowing some to pass on and so give the effect of color, while others are absorbed or destroyed.

It is a fact well-known to textile colorists that a dyestuff may appear much more brilliant on one fibre than it does on another fibre. This is due to the operation of two causes. First there is the great difference in the lustre and brilliancy of the fibre itself; this is a most important point which will be discussed presently. Then the degree of affinity of the dye for the fibre must have some influence on the brilliancy of the color on the fibre; thus, for instance, Rhodamine is more brilliant on wool than it is on cotton, probably because the color that is fixed on the fibre is a chemical compound between the fibre and the dyestuff, whereas in the case of cotton there is no such combination.

The lustre of textile fibres bears a very important relationship to their structure and their power of reflecting light. Taking the three principal fibres, silk, wool and cotton, silk has a much greater degree of lustre than cotton, while wool occupies a medium position. When the fibres are examined under the microscope the cause of the difference is seen in the varying structure of the three fibres and the manner in which they reflect light. Cotton consists of a flattened and much twisted fibre reflecting the light falls upon it not in a definite direction but scattering it in all directions, its lustre being very materially reduced by this feature in its structure. Then again the twisted form of its fibres to some extent prevents the cotton fibre from forming threads in which the fibres are parallel to one another, and this also tends by giving rise to scattering reflection to give a low degree of lustre. Silk has a smooth, homogeneous structure which enables it to form threads in which the fibres are parallel to one another and to have a great power of reflecting light. which is not so scattered as in the case of cotton, so that more light passes from silk to the eye than is the case with almost any other fibre; hence silk has a high degree of lustre. A bundle or mass of loose cotton has for the same reason a whiter appearance than a bundle of loose silk. Now in the operation of mercerising, the cotton fibre tends to become more like silk in the structure of its fibre, hence we find that cotton treated in this way has more lustre than ordinary cotton, and it may be noted that the lustre of mercerised cotton is greatest just after it has passed through the alkaline bath and before it is washed, the shrinking following on the operation of washing appearing to lead to some diminution of lustre, although the finished mercerised cotton still retains some lustre.

Apparatus for Dyeing.

There has recently been patented in this country an improved machine for dyeing cotton and other fabrics, relating more especially to an improved application of the azo-color bases, either singly or in a mixture of bases upon grounded material, for either plain, resisted or discharged patterns, in such a manner that the quantity of the base transmitted to the fabric, the time of contact of the same with the transfer-roller, and the tension by which the fabric is passed over the transfer-roller can be regulated; and the invention consists of a machine for dyeing cotton or other fabrics by means of azo-color bases, which comprises a trough for the base or a mixture of various bases, a padded or clothed transfer-roller rotating in said trough, and tension-rollers supported in upright holders that are mounted at the lower ends and provided with means for adjusting the tension-rollers higher or lower on the same, or for raising or lowering the tension-rollers relatively to the transfer-roller. The inventor is Herman A. Metz.

QUESTIONS AND ANSWERS.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

From a Knitter.

Editor Textile World:

Will you please tell me the number of cotton yarn of which the enclosed fabric is made, and where I can obtain a sample of ten pounds; also please inform me which is the cleaner cotton, that which has been combed or carded.

New York. G. H.

(The fabric enclosed by our correspondent is knitted, and one of the finest products that we have seen of its class. It is made from 120 yarn Sea Island cotton. We have written him where he can probably obtain the required number of pounds of yarn, for experimental purposes, we suppose. The cleanest cotton is that which has been combed.)

Sea Island and Egyptian Cotton.

Editor Textile World:

Will you kindly tell me how much Sea Island cotton is grown in the United States? How much is consumed here and how much sold abroad? What is its selling price; also how much Egyptian or long stapled cotton is imported? What does it cost delivered in the United States? How much Egyptian cotton is grown?

Georgia. T. P. I.

(In reply we will say: The quantity of Sea Island cotton grown in the United States for the year ending August 31, 1896, was 93,045 bales. The average weight was 390 pounds per bale, reckoned upon the export weight of this cotton for the calendar year of 1896. The amount of Sea Island cotton consumed in this country for the year ending August 31, 1896, was 40,092 bales. The amount exported for that period was 52,953 bales. The average selling price now is about the same as that prevailing last December, which was about 20 cents per pound. The statistics of the exports of Sea Island cotton for the calendar year of 1896 are as follows: 50,111 bales, 19,548,272 pounds; average weight, per bale, 390 pounds; aggregate value, $3,711,004, or about 19 cents per pound.

The amount of foreign cotton, mostly Egyptian, imported into this country for the calendar year of 1896 amounted to 47,318,524 pounds, valued at $5,637,893, or about 12.1 cents per pound. This value was that of the cotton at the last place of shipment. To it must be added the cost of freight, insurance and other expenses, in order to get the price laid down in New York. We should say, if 3-4 cent a pound were added it would cover these items. The amount of Egyptian cotton grown in 1895 may be taken as the same as that exported for the season of 1895-96, which amounted to 684,000 bales of the average weight of 724 pounds per bale. Our statistics and values are taken from United States custom house returns, and those to be found in A. B. Shepperson's "Cotton Facts.")

An Experienced Man is Wanted.

Editor Textile World:

I see on page 97 of your March issue that one of your correspondents asks for information in regard to the finishing of half-hose and ribbed hose. I should say that what your correspondent really wants is an experienced man to manipulate, or in other words, to manage his mill from knitting to finishing. The great trouble with both the Southern and Western mills is that they ask for information through the press instead of hiring a competent person to manage their plants.

New York. G. B. B.

Fibre Gears.

Editor Textile World:

Will you please furnish me with the names of manufacturers of the fibre or material of which the sample gear sent with this is composed?

Massachusetts. F. B.

(The sample referred to by our correspondent is a gear made from what is known as fibre stock, similar to that used in the manufacture of paper. Its employment in the making of gears must be chiefly for the prevention of noise, not for strength. It does not compare with steel in strength. The material from which such gears and similar objects are made is especially prepared from vegetable fibres that have been subjected to the action of powerful chemicals and a vulcanizing process. In structure, the article resembles horn, and possesses the strength and density of a metal, and yet

is elastic and nearly as light as hard wood. It is said to be unaffected by contact with animal, vegetable or mineral oils. It may be sawed, worked in a lathe or planer, riveted, punched, drilled and tapped, and will take a fine polish. It is used for noiseless gears, spool-heads, loom picks, shuttles, friction straps for warp beam heads, and the like. We have written more fully by post.)

Temperature and Humidity.

Editor Textile World:

Kindly give me your opinion as to what ought to be the right temperature and humidity in a spinning room on No. 50's warp made from Egyptian cotton. I have had good spinning with the temperature at 80°, and humidity at 60°.

Rhode Island. J. S.

(We should say that a temperature of 75° and a humidity of 75° to 80° would be theoretically right. This matter was discussed at the last October meeting of the New England Cotton Manufacturers' Association, though more in regard to the conditions affecting weaving, rather than spinning. The general opinion is that a less amount of humidity is needed in the spinning than in the weaving room. Of course, the higher the numbers to be spun, the greater the amount of humidity required. Every spinning room must have its own temperature and humidity, dependent upon the character of the stock used and the fineness of the count to be spun. Alfred Hawkesworth, superintendent of the Merchants Mfg. Co., Montreal, is of the opinion that for a weaving room on goods of similar character to the Lonsdale cambrics, 96x104, with 40's warp and 60 weft, woven in the same room with goods as heavy as 80x92, with 28 warp and 40 warp, the temperature should be from 76° to 80°, and the relative humidity 60° to 75°. John Eccles, superintendent of the Ponemah Mills, at Taftville, Ct., believes that for a room weaving lawns and other fine cotton fabrics, 75° to 80° humidity, and 75° to 80° temperature are best.)

Coarse or Fine Knit Goods.

Editor Textile World:

We would greatly appreciate your opinion as to whether the market is for coarse or fine knit goods, and whether the demand is mostly on misses', full, or half-hose. We have not yet bought our machinery or fully decided what line of knit goods it will be best to enter upon, with small capital, at this time.

Georgia. S. H. S.

(This is an important and broad question, in answer to which we shall be obliged to refer our correspondent to our market reports and to those in other publications that give the knit goods markets. We cannot predict the future wants of the trade, upon which the character of machinery to purchase would largely depend.)

Fast Black for Hosiery.

Editor Textile World:

Will you kindly mail us a few recipes for fast black on hosiery?

Wilkesbarre, Pa. M. & N.

(We refer to recipe 15 (January issue), and recipe 31 (February issue), as the latest that we have. We would suggest to our correspondent that he write to parties that advertise with us, concerning his wants.)

Horsehair.

Editor Textile World:

Will you please furnish me with the names of manufacturers and dealers in animal hair, such as horsehair; and also inform me for what kind of goods horsehair is used for.

Chicago. O. K.

(Our correspondent might write to the following parties: M. T. & J. A. Murphy, New Orleans, La.; Massasoit Whip Co., Westfield, Mass.; American Haircloth Padding Co., Pawtucket, R. I.; Pawtucket Haircloth Co., Central Falls, R. I. Horsehair is used for rope, whips, cloth, felt, girths, jewelry, nets, novelties and the like.)

Cleaning Mixed Cotton and Woolen Goods.

Editor Textile World:

Will you be kind enough to inform me if there is any new process for scouring goods with a wool back and colored cotton face? My difficulty with such goods is that when I use hot enough liquor to take the grease out of the wool back, the cotton face bleeds, or loses its color. I want a clean white wool back, and be able to retain the full color of the cotton face.

Amsterdam, N. Y. J. W.

(Our correspondent apparently is in the knit goods manufacturing business. We know of no special process for scouring such goods as he mentions. In fact, we hardly know how to suggest any method for him to follow. The best thing for him to do is to use the best judgment at his command. His chief atention should be given to the cotton face. Of course, it would be quite advisable that he dye his cotton yarn so that it will not bleed. It would be well if he should use wool requiring but little scouring, and use water at as low a temperature as possible. Goods of this character are sometimes cleaned in cold water, but this process is not always satisfactory. If the trouble cannot be rectified any other way, try a strong salt bath previous to scouring. Avoid as much as possible the

use of soda in any of its forms. Pass the goods through the cleansing liquor as quickly as possible and dry off rapidly.)

Cotton Yarn.

Editor Textile World:

I send you a sample of fancy dyed, or random yarn, and would ask if you could give us the price at which such yarn is sold.

New Brunswick. W. P. & S.

(The yarn sent by our correspondent counts exactly 22.4, probably intended for 23 or 24 yarn. Price, about 29 cents for cops and one cent extra when wound on cones.)

Bleach for Straw.

Editor Textile World:

Can you give me information regarding the chemicals used for bleaching and cleaning straw braids? Also where said chemicals can be purchased in quantities?

New York. S. P. M.

(We refer our corespondent to our advertising columns for parties dealing in the materials he calls for. Concerning the cleaning and bleaching of straw goods, we have to say, that so far as this feature is concerned, there is not much that can be said. The greatest difficulty lies in the mechanical manipulation required in handling the goods to be bleached. Straw presents some difficulties in bleaching, because of its external coating, which is more or less siliceous, preventing penetration of liquids and gases. The yellow coloring matter of straw has such an affinity for the material that trouble is often experienced in its satisfactory removal. The best results that can be obtained in bleaching straw is a cream white color. A perfect white, we believe, is unattainable. We know of no other way of bleaching than in the use of sulphur. The sulphur process, as our correspondent probably well knows, is usually carried out in a small building or room built for the purpose, where the sulphur is burned for half a day or more. But write to our advertisers, and see what they have and can recommend.)

Books on Hosiery.

Editor Textile World:

I want to purchase some books on knitting, hosiery, etc., and have been referred to you.

Conn. F. H. B.

(There is no book published on the above subject. The best source of information is that obtained through textile journals. If our corespondent has any questions to ask concerning the knitting of hosiery, it is barely possible that we can obtain for him the necessary information, with the privilege, of course, of publishing the same if we so desire.)

Paper Yarn.

Editor Textile World:

I noticed a short article on paper yarn, etc., in your February number. Will you please give me the address of parties who manufacture this line of goods, as I have been looking for something of this kind for some time, with reference to weaving into paper cloth, if such a thing is possible.

Illinois. E. S. R.

(We know of no concern that is making paper yarn for sale. Parties that are making this yarn manufacture it to use themselves, and do not sell it.)

Embarking in Hosiery Business.

Editor Textile World:

Please send me a copy of your paper, as I am thinking of going into the hosiery manufacturing business here, and in case I do, would want to subscribe for it. Mr. ——— referred me to you as the leading authority on the subject. There are two of us thinking of going into this business together, and we have been hesitating and investigating because we were not sure whether or not this would be a profitable line to engage in. From what you know in this matter, do you think a concern of this kind established here, with capital of $10,000 to $25,000 would be a profitable one, provided of course that same is conducted on business methods. Where is the best place to get the latest improved machinery in this line? Thanking you in advance for your kindness, and assuring you same will be appreciated, I am,

St. Louis, Mo. L. P. N.

(You will do well to carefully investigate the hosiery business before embarking in it, especially if you have no practical knowledge of same, as in that case you will be largely dependent on your superintendent. General advice, without personal knowledge of the parties to whom it is offered, or the circumstances under which they propose to do business, has, as you know, but very little value. We have in scores of cases been asked similar questions by parties about to embark in the business. We can only reply by saying that when properly conducted, under good management, with modern efficient machinery, and good facilities for marketing the product, and a good location, where a good class of help can be obtained at reasonable wages, where freight rates and shipping facilities are favorable, there is as good prospect of making money in the manufacture of hosiery as in any other line of business, and with less capital invested than in most manufacturing enterprises.

We would lay special stress upon the importance of associating yourself with the right man, who has experience in the business, provided you have no practical

experience yourself. Also investigate carefully and get a good line of modern machinery. The best is none too good. As you are locating in the West, you would be somewhat handicapped by lack of local facilities for dyeing and finishing, unless you propose to do that yourself, which would be perhaps the best way under the circumstances.

As to the best place to get the latest improved machinery in this line, we would refer you to the advertising columns of the Textile World, where you will find represented practically all the leading builders of such machinery.)

New Publications.

APPLETON'S POPULAR SCIENCE MONTHLY for April, 1897. New York: D. Appleton & Co. The article of the Hon. David A. Wells (of his series on taxation) in this number is devoted to the question "How Can the Federal Government Best Raise its Revenues?" In it the author shows that a higher tariff will not be a true revenue measure, and proposes, instead of it, the taxation of a few special articles. Prof. William Z. Ripley's paper on "The Racial Geography of Europe" is devoted to the distribution of blondes and brunettes, the origin and nature of the differences between them, illustrated by maps. "In Reversions in Modern Industrial Life," Mr. Franklin Smith considers the trades-union organizations of the present time. Among other articles are the following: "The Physiology of Alcohol." "Spencer and Darwin;" "The Language of Crime;" "The Stability of Truth;" "Life on the Planets and Ants as the Guests of Plants.

THE STUDENT'S HANDBOOK OF PRACTICAL FABRIC STRUCTURE. By H. Neville, Blackburn, Eng.: R. Denham & Co., 8 vo., 235 pages. Price $2.25. The author of this work is the principal of the textile department of the Municipal Technical School, Blackburn, England. The object of the work is to interest the students in the subject of weaving by a series of consecutive lessons in the principles of fabric structure. The method pursued is one of simplicity, as the most helpful to the learner. The free use is made of sectional diagrams to show what actually takes place in producing any particular fabric. An idea may be had of the nature of the book by the following partial enumeration of the subjects treated: Design paper and its uses; plain cloth and its ornamentation; twilling; drafts and tie-ups; spotting; open work effects; cords; pile weaving; cross weaving; and backed and double cloth.

GUNTON'S MAGAZINE for April, 1897. New York: Political Science Publishing Company. This is a magazine published monthly and devoted to practical economics and political science. The articles are largely the production of Professor Gunton. The principle articles in this number are the following: Integrity of Tariff Discussion; Protective Navigation Laws; Condition of Labor in Japan; Perpetuation of the Turks in Europe.

BULLETIN OF THE NATIONAL ASSOCIATION OF WOOL MANUFACTURERS for 1897. Edited by S. N. D. North, secretary, 70 Kilby St., Boston. This is a quarterly magazine devoted to the interests of the national wool industry. This is the first number of Vol. 27, and contains valuable and most interesting matter relating to the woolen industry. The leading article is on "Industrial Education," being an address delivered by Mr. North at the opening of the Lowell Textile School, January 30, abstracts of which appear in our February and March issues. This address is a most scholarly one. Those desiring to be well informed concerning recent events bearing upon tariff legislation should read the annual report of Mr. North to the Association, taking up such topics as, "Customs Administrative Act," "The Dingley Deficiency Bill," and the "Specific Duties on Woolens."

GUNTON'S MAGAZINE for March, 1897. New York, Political Science Publishing Company; price, $2 per year. This is a monthly magazine devoted to practical economics and political science, edited by Professor Gunton. Among the articles treated of in this number may be mentioned the following: "The New Administration," "Are Luxuries Wasted Wealth?" "Growth of Sound Financial Opinion," "How to Attain the Eight Hour Day," "High Wages and Cheap Production," "Organized Labor Abroad."

ANTHRACENE ACID BROWN G. DIAMINE CATECHINE G and B. These are two circulars that we have received from William J. Matheson & Co., Ltd., New York, agents for Leopold Cassella & Co., relating to these dyes. There are several brands of Anthracene Acid Brown, known as B, G and R, all in good repute. One of the useful features of these new dyes is that they can be combined with other dyestuffs, such as Anthracene Yellow, Diamine Fast Red F., etc., to produce many useful shades, as dark browns, navy blues, greens, etc. The fastness to milling of these browns is very satisfactory. The fastness is increased by the chroming process.

POLITICAL SCIENCE QUARTERLY for March, 1897. This quarterly is edited by the faculty of Political Science of Columbia University, published by Ginn & Co., Boston. The principal articles in this number are the following: "James Wilson and the Constitution," by Prof. A. C. McLaughlin; "Four German Jurists," by Prof. Munroe Smith; "The Process of Social Change," by Charles H. Cooley; "Classification in Public Finance," by Prof. Carl G. Plehn; "Agricultural Discontent," by C. F. E. Emerick; "Journeymen's Clubs," by Prof. W. J. Ashley.

BLEACHING AND FINISHING MACHINERY FOR TEXTILE FABRICS. H. W. Butterworth & Sons Co., Philadelphia, Pa., have just issued a trade catalogue of 28 pages, relating to their machinery for bleaching, printing, dyeing, drying and finishing of textile fabrics. The catalogue contains many illustrations of the machines of this concern, among which may be mentioned the following: Cylinder drying machine, twelve color printing machine, the patterns for which are entirely new and embrace every improvement which experience has suggested; color mixer with stirrers, five roll cylinder, with paper, cotton or husk rolls; gas singeing machine for cotton, woolen and worsted goods; tentering machine, with patent automatic clamp for lawns, etc.; dyeing machine, for cotton, woolen and worsted piece goods, also for cotton warps; and hank yarn drying machine, the drying capacity of which ranges from 1500 to 10,000 pounds in ten hours.

Industrial Notes.

The stated annual meeting of the New England Cotton Manufacturers' Association will be held at Boston, Mass., Wednesday and Thursday, April 28 and 29. The sessions will be held in Chipman Hall, in the Tremont Temple Building, No. 88 Tremont Street, a short distance south of School Street and opposite the Tremont Building.

The sessions will be called to order on Wednesday at 11 A. M., and 2 P. M., and on Thursday at 10 A. M., and 2 P. M.

The order of exercises, Wednesday, will be as follows.

First session: Address of Welcome, by His Excellency, Roger Wolcott, Governor of the Commonwealth of Massachusetts; election of members; report of secretary and treasurer; election of officers.

Second session: Address, by Curtis Guild, Jr.; "The Handling and Transportation of Cotton," by Stephen A. Knight; "Cotton Transportation from a Railroad Standpoint," by Messrs. T. F. Leavitt, M. M. Hurley, and C. W. Gibson; "The Round Bale and the New England Spinner," by D. C. Ball; "Picking and Carding," by Marcellus Gould; "The Paul System of Drying," by Herbert L. Pratt.

Third session (Thursday): "The Lowell Textile School," by Christopher P. Brooks; "The Manufacture and Use of Spinning Rings," by George A. Draper; "The Ring Traveler, Its History and Progress in the Spinning and Twisting of Yarns," by A. Curtis Tingley; "Ring Spinning," by Alfred E. Adams.

Fourth session: "Electricity for Mill Purposes," by Frank P. Sheldon; "Recent Advances in Weaving," by William G. Nichols; "Weaving as a Fine Art," by Alfred Hawkesworth; "The Growth of the Modern Factory System," by Alfred M. Goodale; "Management of Country Mills," by Russell W. Eaton; "A Cotton Spinning Mill at Crefeld, Germany," by Hon. Peter V. Deuster, U. S. Consul; "Early Days of the New England Cotton Manufacturers' Association," by Col. Samuel Webber.

—The Stone and Ware Company, 157 Maiden Lane, New York, has established an excellent reputation among manufacturers for the purity of the colors, dyestuifs, extracts and chemicals in which it deals. This company furnishes special colors and chemicals for all purposes. We direct attention to their advertisement found in this month's magazine.

—Bealtie's Machine Works of Cohoes, N. Y. are now exporting a good number of loopers to England.

—The woolen and merino yarns of the River Spinning Co., Woonsocket, R. I., Johnson & Farie, selling agents, 570 Bourse Building, Phila., will be handled hereafter by Walter D. Larzelere who has succeeded Andrew Adie as agent at the Phila. office. Mr. Larzelere has been Mr. Adie's assistant for several years, and the experience and wide acquaintance thus gained will be brought to bear in his new and more important position.

—W. C. Von Buchwald, veteran machinist and maker and repairer of sewing machines, has recently opened a shop at 120 North 7th St., Philadelphia, where he is finely equipped for doing all kinds of sewing machine work. His special service to the knitting trade is attaching fabric trimmers to machines of every class, and making general repairs and alterations. He also builds to order concealed welting and trimming machines. Mr. Von Buchwald is well known as a skillful machinist, and a veteran of many years in the construction of sewing machines for the knitting trade. His card appears on page 170.

—Galaxy acid, sold by John J. Keller & Co., 104 Murray St., New York, is a very high grade of lactic acid, the quality, purity and strength of which is worthy the attention of manufacturers. This acid is intended to take the place of tartar, argols, oxalic and sulphuric acids in mordanting wool in conjunction with bichromate of potash, and possesses the property of liberating upon the fibre free chromic oxide, giving excellent results in the dyebath and effecting a considerable saving of dyestuffs. It is a clear, light brown liquid which is free from acetic, sulphuric and butyric acids, and is guaranteed to contain 50% pure lactic acid.

—Walter J. Vogt has removed to No. 320 Bridge St., Corner of Myrtle Avenue, Brooklyn, N. Y., and is prepared to receive and fill orders for dress, cloak, millinery and furriers' trimmings.

—The well-known dry goods commission house of O. H. Sampson & Co. will retire from business on April 15th, when the present partnership will expire by limitation. The general partners are: Oscar H. Sampson, Charles E. Sampson, Eugene H. Sampson and Joseph Sargent, with W. A. Slater special partner, who contributed $400,000 to the capital. The withdrawal of the latter is the primary reason of the firm's retirement. The concern has been a prominent handler of Southern cotton goods, among its Southern accounts being the Henrietta Mills, Enoree Manufacturing Co. Charleston Cotton Mills, Cowpens Manufacturing Company, Rock Hill Cotton Company and Columbia Mills Company. It also handled the business of the Mississippi Woolen and Cotton Mills and the mills of the W. A. Slater Mills Corporation, while its yarn business was one of the most important in the city. There are many rumors afloat as to the disposition of these various accounts, but beyond the fact that the W. A. Slater Mills Corporation will sell its goods directly there is nothing absolutely settled yet. The firm has an excellent record. It was founded originally in Boston, and the New York branch was opened about a quarter of a century ago. The several partners are esteemed as clean-cut business men, and have always held the regard of their competitors and customers.

—The Committee on Mercantile Affairs of the Massachusetts Legislature has voted to report favorably on the petition of the Whitman Mills for permission to increase its capital stock to $2,000,000. Charles C. Diman, treasurer of the mills, says the business was started to compete with a line of goods that were being imported. While the capital stock is now $700,000 there is a debt of something over $300,000. With an additional capital of $700,000 the debt would not be increased. The present plant was arranged with a view to this proposed addition, and some parts of it have capacity enough for the increase. There will have to be no additional land purchased. The chimney and boiler house will not have to be added to, and the office accommodations are amply sufficient. This represents a greater part of the present debt. The mill is a Massachusetts corporation. It has only one stockholder outside the Commonwealth.

The company began business in July of last year, and since that time has paid two dividends, at the rate of six per cent. per annum. The company's real estate cost $930,000. Fine cottons are manufactured, mostly novelty dress goods. The present mill runs from 30s to 120s. The new mill will run from 120s to 200s or 220s. Over 800 persons are employed in the present mill, and the pay-roll averages $7,000 a week. The debt of the company is a floating one. There is no mortgage on the property.

—The Howard & Bullough American Machine Co., of Pawtucket, are making large shipments of machinery. They have a number of contracts now in hand for the South, including the Graniteville Mfg. Co., Enoree Mfg. Co., Mt. Vernon Mills, York Cotton Mills, and others. They have recently made shipments of cards to the Clarke Mile-End Spool Cotton Co., of East Newark, which firm recently placed a large order for revolving flat cards with this company.

—Theodore H. Colvin, of Providence, R. I., has commenced work on his new foundry building. This building will be 102 feet wide and 180 feet long, and will be a complete and modern foundry building in every respect. The central portion, 50 feet wide, will be served with a 20-ton traveling crane, and at a distance of about 25 feet in the length of the building will be placed 5 ton jib cranes, swinging from the central portion of the building over the moulding floors in the wings, which extend along both sides of the building, and are 25 feet wide. The entire frame work of this building will be steel. The roof covering is to be slate. The steel work is being furnished and erected by the Berlin Iron Bridge Co., of East Berlin, Conn.

—The success of the operation of long distance electrical transmission is perhaps best gauged by the opinion expressed by the company operating the plant. An extract from a recent letter regarding the operation of the Fresno, Cal., long distance transmission may be interesting to our readers. It was written by John J. Seymour, president of the San Joaquin Electric Company, operating the San Joaquin River-Fresno transmission, to the General Electric Company, which installed it: "It affords me great pleasure to write you regarding the successful operation of the long distance transmission plant installed for our company. The entire plant as furnished has been in actual practical operation for a period of several months. The 35 miles transmission has given us no trouble whatever. Our load at present consists of 145 arc lights, and 5000 incandescent lights, and 410 h. p. in motors, the latter including 180 h. p. for the Sperry Flour Mill, and 75 h. p. for the city pumping plant. All of the machinery doing this work has worked with perfect success from the start. The incandescent lights have most of them been newly wired in, thus enabling us to properly balance the load, and the regulation has given us no trouble whatever. During extensive tests it was impossible to find more than two volts variation between any lamp on the system. Lights so furnished seem to me to be better than incandescent lights usually furnished in San Francisco and other cities of the State."

—There is a bill before the Massachusetts legislature relative to windows in factories, requiring every building used as a factory to have the windows in all the rooms thereof, in which persons are employed at work, to be plain window glass, i. e., no ground glass, opaque glass, or other kind of glass which obstructs the view of what is outside from persons within such rooms. Should this become a law, the penalty attached to the violation of this act is the forfeiture of $200 to $1000 for each month during which the objectionable glass is allowed to remain in the windows. We mention this to show the character of some legislation that is asked for by a people that are ignorant of the consequences of their demands. The bill, we feel sure, will not pass the legislature.

—Stoddard, Haserick, Richards & Co., Boston, Mass., deal largely in Egyptian, Peruvian and other foreign cottons. They have a very attractive advertisement in this issue of our magazine on page 14.

—The Berlin Iron Bridge Company, of East Berlin, Conn., have contract for furnishing the steel roof for a large store house which is to be erected by the Waterbury Manufacturing Company, Waterbury, Conn. This building is 54 feet wide and 144 feet long. The side walls are of brick. The roof will be supported by steel trusses. The covering is to be corrugated iron lined with the Berlin Company's Patent Anti-condensation Fireproof Roof Lining.

—The Shove Mills, Fall River, which recently placed their entire order for card room machinery with the Howard & Bullough American Machine Co., of Pawtucket, have ordered the metallic top and bottom rolls made by the Metallic Drawing Roll Co., Indian Orchard, for all their new drawing, and also for all of the old drawing now in the mill, which will be changed over.

—The proposed new tariff now before Congress provides for an increase in duty of ten per cent. upon all coal tar colors and for twenty-five per cent. on developer. The importers of these colors have been before the Committee on Ways and Means and have strenuously opposed this increase of duty, and it is their intention to press their opposition energetically before the Senate Finance Committee.

—Wm. J. Kent, agent of the Wamsutta mills, New Bedford, Mass., died Tuesday last, after a long illness. Mr. Kent was born March 9, 1853, at Lonsdale, R. I. After graduating from the Lonsdale high school he was employed in the repair shop of the Lonsdale Company. From there he went to the Naumkeag mill at Salem in 1877, and remained about a year as head draughtsman and assistant superintendent. Leaving the Naumkeag mill he went to the Lawrence Manufacturing Co. at Lowell and remained about two years in the same capacity as at Salem. In 1881 he went to the Border City mills, remaining there about a year and a half as superintendent of the Grinnell mill at New Bedford, and later became agent of the Wamsutta mills at New Bedford. He was also a director in the Queen City Corporation, Wilmington, Vt. He leaves a widow and children.

—There are 4,042 business failures in the United States reported by Bradstreet's during the past quarter, compared with 4,512 in the first quarter of 1896, a falling off of about 11 per cent. The decrease is reported from all sections except New England and the territories. The larger

number of eastern state failures are small ones, for total liabilities of those failing in the New England states are about 22 per cent. smaller during the past quarter than a year ago. Liabilities of all individuals, firms and corporations which failed amount to $62,513,000 a falling off of 16 per cent. from the corresponding total last year.

—The following sales at auction were made in Boston recently: 3 shares Salmon Falls Mfg. Co. at 212½; 15 do Lyman Mills at 74½; 5 do Massachusetts Cotton Mills at 105; 10 do Great Falls Mfg. Co. at 140; 4 do Chicopee Mfg. Co. at 70; 1 share Merrimack Mfg. Co. at 1112½; 2 shares Laconia Mfg. Co. at 626 and 9 do Manchester Mill Co. at 101⅛.

—The market for carpets is very firm, says a carpet jobber, and many mills that turn out the low-priced goods are now demanding higher prices and decline orders based on prices ruling a week or ten days ago.

—Many department heads who contemplated early visits to the European textile manufacturing centres have, for the present, decided to defer their departures indefinitely, to await the outcome of the retroactive measure on the new tariff bill that passed the House.

—The Gwyn-Harper Mfg. Co., Paterson, N. C., have placed their order for slubbing and roving frames with the Howard & Bullough American Machine Co., Pawtucket.

—In hosiery some improvement in fancy lines is anticipated for the coming spring. Among the recent importations are the boot patterns, with plain solid colored tops in lighter shades or with a small neat stripe in the tops, these being favored in the low-priced qualities. In the finer goods combinations in Lisle and fine cotton grades in boot patterns and in stripes all the way down.

—An importer of woolens, who has just returned from a trip to the English producing centres, reports that the great bulk of the trade in the British markets has been in plain goods on the order of vicunas, serges and worsteds. Worsted trouserings were also disposed of to a considerable extent, and a feeling prevailed in favor of striped suitings in worsteds and tweeds. What are known as linestripes in worsted cloths of the fancy make have come largely into favor on the other side, and he predicts good results in these at home for the heavy-weight season. For the heavier makes of beavers and meltons the demand was fair, but naps have entirely gone out of fashion.

—At the late annual meeting of the Oldham Chamber of Commerce, Eng., one of the speakers said: Geographically Oldham stood upon a hill, and commercially Oldham liked to occupy the highest position in cotton spinning and machine making. Oldham and Lancashire had no need to fear competition because they could so readily adapt themselves to any circumstances that turned up. Adverting to the question of capital and labor he said if manufacturers allowed common sense and reason to rule they would have no trouble in that direction. "There was a better feeling in the cotton trade, the shares of the local limiteds were appreciating, and the dark cloud was lifting from the town. There was every reason to believe that the local staple industry would continue to prosper if they would only keep clear of the suicidal policy of floating more mills. Although the Board of Trade returns were more favorable it must not be overlooked that something like two million spindles in Oldham and district had gone out of existence, and that must to some extent have contributed to the spinners' better margin."

—We have a few copies of that most excellent work entitled, "The Power Loom," by Alexander Brown, which we will send to anyone, so long as the lot lasts, for $1.04, postage prepaid. This is a chance seldom offered.

—This policy of not offering wools as they come to hand has never in the long run answered, it tends to over-weight each succeeding series, and leads to great irregularity and hesitancy on the part of buyers, while long experience has shown that meeting the market as it comes, if with fair competition, is the only one to give general satisfaction.

—Sida is a new textile fibre allied to jute, obtained from various species of Sida plants, Sida carpina, folia, Sida cordifolia, Sida humilis, and others. These plants, which are largely cultivated in India, are said to yield a fibre much superior to jute, being longer, freer from impurities, and more easily dealt with. In general features Sida closely resembles jute, having a similar composition and properties. The proportion of ash is small, being less than is usually present in jute, and there is a large proportion 75 to 80 per cent., of cellulose. The fibre has only slightly absorbent properties for water.

—The Graniteville Mfg. Co., Graniteville, S. C., have placed another order for speeders with the Howard & Bullough American Machine Co., Pawtucket, R. I.

—The Dickson Mfg. Co., of Scranton, Pa., have commenced the construction of a new boiler shop 130 feet wide and 225 feet long. The building will have a steel frame work throughout. The sides will be covered with corrugated iron and the roof with composition roofing on plank. The main boiler shop is about 52 feet wide and 45 feet high. Thirty feet above the ground is a runway made of substantial steel girders, which carry a 30-ton power traveling crane. At one end of the main shop is a riveting tower 25 feet by 50 feet, having a runway carrying a 20-ton crane 50 feet above the floor level. The crane in the riveting tower runs at right angles to the one in the main shop below. Adjoining the main shop is a punch room, which is about 50 feet wide, extending the full length of the building. Attached to the roof trusses of this portion is a traveling crane of 5 tons capacity, which covers the whole floor surface. Adjoining the punch shop is a space for the flange fires and other furnaces, 25 feet wide and 225 feet long. All the main posts of the building are arranged so that jib cranes can be attached to them, and the trusses are arranged so that shafting and other machinery may be attached at convenient points. This building when completed will be without doubt of the handiest and best equipped shop of its kind in the country. The steel work was designed and will be furnished and erected by the Berlin Iron Bridge Company, of East Berlin, Conn.

—Pennsylvania, Philadelphia. The Glazier Hosiery Mills, Ltd., inform us that they are closing up, and will retire from business.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Birmingham. The new cotton mill company has been incorporated as the Avondale Mills Co. B. T. Comer is president. Birmingham furnished $150,000 of the capital stock, and David Trainer of Chester, Pa., and associates, $250,000 to which will be added $100,000 in bonds. Plans have been prepared for a structure 125x300 feet, four stories high, in which 30,000 spindles and 1100 looms will be installed.

—Alabama, Huntsville. It is being reported here that Eastern capitalists will erect at Huntsville a cotton mill of generous porportion.

—Alabama, Mobile. At the regular monthly meeting of the Commercial Club, held on the 19th inst., the question of a cotton mill for Mobile was discussed. The club is said to have decided in favor of a $200,000 mill, and it is their intention to push the project along as fast as possible.

—Georgia, Augusta. The John P. King Mfg. Company, of Augusta, will make extensive improvements to its plant in the near future, that the company will erect a new mill to be equipped with 20,000 spindles and complementary machinery, and that the work for the additional buildings needed will be commenced in April. At present, this company operates 40,288 spindles and 1200 looms, in the manufacture of standard and fine sheetings, shirting and drills.

—*Georgia, Augusta. L. J. Miller, who we reported as making investigations regarding machinery, etc. for a bagging mill, writes us that what he wants to know most is where he can purchase machinery for such a mill.

—Georgia, Douglasville. Colonel J. S. James, of this place, is said to have interested a number of New York and Georgia parties in a new cotton mill project, at Douglasville, and that arrangements for the erection of a plant will be completed at once. That the interested parties have made application for a charter for the Georgia Western Cotton Mills, with the capital stock placed at $350,000, the incorporators being J. Herzog, of New York; J. M. Blakely, of Michigan; Simon Baer, of Atlanta; J. S. James, J. T. Duncan, J. P. Watson and R. E. James, of Douglasville; T. L. Galloway, of Decatur, Ga., and M. Dittenhoffer, of New York. It is their intention to erect a 15,000 spindle mill.

—Georgia, Douglasville. Col. J. S. James is negotiating for the erection of a new cotton mill in Douglasville, other than the Georgia Western Cotton Mill, reported in this issue.

—Kansas, Topeka. It is possible that a twine factory will be established at the State Penetentiary. A bill to that effect is now before the House.

—Kentucky, Paducah. Articles of agreement leases, incorporation, etc., have been drawn up for a new cotton mill that is to be started here in a few weeks. The new mill will be of 15,000 spindle capacity.

—*Massachusetts, Fall River. The new 40,000 spindle cotton mill that is to be erected here, and of which John P. Bodge, superintendent of the Hargreaves Mills, is to be treasurer and agent, will be located on the west side of Quequechan Street. Work will probably be commenced at an early date. This project was mapped out more than a year ago, but has not been pushed forward on account of the business depression.

—New York, Depew. The daily papers have had more or less to say about a large cotton mill to be established at this place by New England capital. The Textile Advance News is enabled to give the following official information:

A 40,000-spindle mill with about 1200 print cloth looms will be built on the land of the Depew Improvement Co., in the town of Depew, about 10 miles out of Buffalo. The capital stock is to be $550,000. Practically all of this has been subscribed, all but about $100,000, being taken by New England men, most of whom are largely connected with mill enterprises. Mr. Joseph McCreery, formerly superintendent of the Shove Mill, is the practical man at the head of the company, and the deal has been consummated after long and careful negotiations between him and Mr. J. A. Spoor of the Wagner Car Co., representing the Depew Investment Co.'s interests, and Mr. Frank H. Morgan of Boston. The Depew Investment Co. is controlled by the interests represented by Chauncy M. Depew, president of the New York Central railroad, W. Seward Webb, president of the Wagner Car Co., and John Jacob Astor, and the same interests will be represented in the new company, probably by two directors, of whom Dr. Webb will surely be one, and either Mr. Depew or Mr. Astor the other. The general management of the concern will be in the hands of New England mill men. Its proximity to Niagara Falls has led to careful consideration of electricity as a motive power. This has not yet been fully decided upon. Coal is very cheap, and there is much to be said on both sides of the question.

Depew is not a new town, as some of the reports would lead one to believe, but has already large railroad shops, car factories and others, giving employment to several thousand men, many of whom go to and from Buffalo for their daily work, but who would live in Depew, if there were any occupation provided for their wives and families. This will be given by the new cotton mill. Mr. McCreery is too well known to the mill public to need any introduction, and it has been an open secret in mill circles for some time that there was plenty of capital willing to back him in any mill enterprise he might wish to engage in. Practically all the important machinery has been arranged for. Kilburn, Lincoln & Co.'s looms will be used. The mill will not be over two stories in height, the greater part of it probably only one story. It will be of the best modern construction, and equipped with modern machinery.

—North Carolina, Aberdeen. There is a movement on foot at Aberdeen for the organization of a cotton mill company. J. W. Graham can probably give information.

—*North Carolina, Aberdeen. Concerning the cotton mill company that we recently

reported would be organized at Aberdeen, we are officially informed that the name of the new concern will be Aberdeen Cotton Mills, and that they will erect a new structure in which hosiery yarns will be manufactured. Steam will be the motive power. The company has not yet organized. The following parties are the promoters: N. S. and John Blue, H. R. Clark, D. A. McLauchlin, H. A. Page, J. F. Allred, F. A. Ordway and J. W. Graham. Any communication for the company should be addressed to J. W. Graham.

—*North Carolina, Taylorsville. U. L. Alspaugh, whom we reported had just completed his new mill, writes us that he has just installed 24 new looms, and that he will manufacture standard sheeting and drilling.

—Pennsylvania, Reading. The Keystone Handkerchief Company is a new concern just located at 143 Cedar St. Mahlon H. Seidel and Alonzo Baumner are its members. They have seven machines engaged in the manufacture of white lawn handkerchiefs. The manufacture of colored handkerchiefs will be added later on.

—Rhode Island, Fiskville. It is rumored that the order to close the Fiskville mill at this place was made with the intention of building a much larger and better mill, and supplying it with the latest and most improved machinery. The mill is owned by the B. B. & R. Knight company, of Providence, and previous to its being closed down, on the 27th ult., has been operated by that company.

—*Rhode Island, Westerly. The Caledonia Textile Co., recently incorporated under New Jersey laws, has, we are informed, decided to locate in this city. The corporation will erect a plant to contain 65,000 spindles and 1650 looms, for the manufacture of fine cotton piece goods, that will give employment to about 800 hands. The work will be begun at once. The incorporators named are M. Clark McEwan, Matthew Clark and William Whittam, Jr. Mr. Whittam was formerly general manager of the Clark Mile End Spool Cotton Co., at Newark, N. J. We reported in our issue of Jan. 30, 1897, that Mr. Whittam had severed his connection with that company, and that he would organize a new company.

—*Tennessee, Newport. The Newport Cotton Mill Company, which was organized in February, 1896, have started a new mill of 200 loom capacity, nearly all of which are now in operation.

—Texas, Fort Worth. Judge S. O. Moody is at the head of an effort that is being made here to secure the location of a cotton mill for Fort Worth.

Enlargements and Improvements.

—Arkansas, Mammoth Springs. The parties who recently purchased the Mammoth Springs Cotton Mills, will, it is said, add 3500 new spindles. T. W. Wiley is the manager.

—Georgia, Augusta. The Sibley Mill is reported as having let a contract for a one-story extension, 80x300 feet, and that 300 new looms will be installed therein. The machinery has been purchased.

—Georgia, Savannah. The stockholders of the Savannah Cotton Mills at a recent meeting, decided to appoint a committee to make arrangements for the issuing of $60,000 of bonds, which will be used to increase the machinery to the extent of $25,000, and its working capital by the balance. The mills are capitalized at $100,000.

—Massachusetts, New Bedford. At a meeting held this week by the directors of the New Bedford Mfg. Co., it was voted to extend the present equipment by increasing the capital stock to $1,000,000, and adding 40,000 spindles. We understand that no new mill will be erected, but a story will be added to the No. 2 mill, which will be extended to Second St. The work on the same will probably begin at once.

—Massachusetts, North Adams. The Windsor Print Works are contemplating changes which may include the selling of their Esty & Stone Cotton Mills, and the remodeling of the old Eagle Mill, and equipping the same with new and improved machinery for the manufacture of prints.

—North Carolina, Charlotte. The O. A. Robbins Company of Charlotte, manufacturer of sash cord and clothes-line is said to be making arrangements for doubling the capacity of its factory and that all kinds of horse webbing back bands, lamp wicks and similar goods will be added to the product.

—South Carolina, Blackburg. The Cherokee Falls Mill Co. are said to be making plans for installing some new looms in the near future.

—South Carolina, McColl. The McColl Mfg. Co. write us that the report that they will begin the manufacture of rope, is correct, and that they are now in the market for machinery for that purpose.

Mills Starting Up.

—Massachusetts, Holyoke. The Farr Alpaca Co. has commenced running its No. 1 mill on full time. The mill has not been run to its full capacity for more than one year.

—Massachusetts, Salem. The Naumkeag Cotton Mills have commenced running full time, with a full complement of help.

—Rhode Island, East Greenwich. The Elizabeth Mill has resumed operations again on full time, after having been run on about 50 hours per week for several months.

—Rhode Island, Forestdale. The Forestdale Manufacturing Company has resumed operations on full time. Their mills have been running four days a week for the past seven months.

—Rhode Island, Georgiaville. The Bernon Mills, which have been running on short time for several weeks, are now running full time.

—Rhode Island, Providence. A despatch states that the B. B. & R. Knight's Co., whose mills had been running but 45 hours per week, will resume operations in full about April 1st.

Mills Shutting Down.

—New Jersey, Newark. The Mile End Thread Mills, at East Newark, has closed down for an indefinite period.

—Rhode Island, Providence. The Dyerville Mfg. Co., who recently started their mill after an idleness of some sixteen weeks duration, have again closed the same, and it is understood that the mill is now closed indefinitely.

Woolen.

New Mills.

—Kentucky, Hopkinsville. A small woolen mill will soon be located here. J. H. Cate has removed from Ramsey to this place, and has leased the Eugene Grist Mill property. He will build an addition to the mill, in which he will place carding ma-

chines, and it is his intention to gradually increase the plant as circumstances will permit. Mr. Cate's father, who now operates a woolen mill at Ramsey, will probably remove to this place.

—Maine, Fairfield. The machinery is being placed in position at the Fairfield Mills.

—Massachusetts, Franklin. A report reaches us that Miller & Prendergast, of Pascoag, R. I., contemplate erecting a mill in Franklin.

—Massachusetts, Jefferson. The North Woods Mills, that were recently destroyed by fire, may be rebuilt.

—*Oregon, Portland. The new company that we recently reported organizing here, will be known as the Pacific Woolen & Clothing Manufacturing Company. They will engage in manufacturing woolen goods and cloths in Portland. The new establishment is intended to receive wool as it comes from sheep and turn out clothing made to order. Chas. Coopey is the principal promotor of the new concern. The plan is to move to this city a woolen mill now in operation. To this plant additions will be made and a department for manufacturing clothing will be added. The plant to be moved is estimated to be worth $30,000, and the capital stock of the new concern will be from $75,000 to $100,000.

—Pennsylvania, Philadelphia. A three-story brick woolen mill, 53x128 feet, is to be built for Frank Cox, at the corner of Cambria and Ormes Sts.

—*Pennsylvania, Philadelphia. Work has been begun on the erection of the four story and basement carpet factory that is to be erected for C. H. Mashland, owner of the Amber Carpet Mills, at the corner of Amber and West Moreland Sts. The new structure will cost about $16,000.

—Pennsylvania, Philadelphia. Lawrence Collins is starting a carpet factory at Allegheny and Kensington Avenues.

—Pennsylvania, Stroudsburg. We have a report that George H. Harvey, proprietor of the Gobelin Tapestry Company, of Philadelphia, Pa., has formed a company for the purpose of engaging in the carpet manufacturing industry in this place, where a building to cost $10,000 will be erected by money furnished by Stroudsburg citizens. The machinery will be furnished by Mr. Harvey. When in operation, about thirty weavers will be employed.

—Rhode Island, Thornton. We have a report that Mr. Charles Fletcher will soon begin the construction of two more new mills at Thornton.

—Wyoming, Afton. A new factory to contain one set of woolen machinery is about completed at Afton. The plant will be operated by Messrs. Buckley & Sons, of Franklin, Idaho, who now operate the North Star Woolen Mills, at that place. The name of the new plant will be Star Valley Woolen Mill.

Enlargements and Improvements.

—Massachusetts, Jefferson. We have a report that the Jefferson Mfg. Co. will build a three story building, 36x80 feet, in which they will install new carding, spinning and weaving machinery.

—Pennsylvania, Bell's Landing. James Pontefract & Co., the woolen manufacturers, are building a new ell to their mill, to be used for a picker room, dye house and boiler room.

—Pennsylvania, Philadelphia. The Philadelphia Tapestry Mill Co. has been organized, and its capital stock increased from $100,000 to $250,000. J. Wasserman is president, John Zimmerman, vice-president and superintendent. B. Wasserman is general manager. It is said that the company will soon enlarge their plant.

Mills Starting Up.

—California, San Jose. The San Jose Woolen Mills have resumed operations after remaining idle since the middle of last September. The company has secured the contract for supplying the cloth for the convicts' suits for the California State Prison at Folsom and San Quentin.

—Connecticut, Rockville. The Hockanum, Springfield, New England, Rock and American mills resumed running full time on Monday the 22nd inst. These mills have been running about two-thirds time since February, 1895.

—Connecticut, Vernon. The Vernon Woolen Co. has resumed operations, after a shut down of several weeks.

—Illinois, Hanover. Work has been resumed in the Hanover Woolen Mills, with a full force of help.

—Massachusetts, Adams. A report states that the Phillips Woolen Mill, which has been idle two years, has been leased to Michael Glennan of Dalton, and New York parties, and that a corporation will be formed and the mills equipped with new machinery and put in operation by the first of May.

—Massachusetts, Dalton. The Hampden Woolen Co., that has been operating the Ravine Woolen Mill, at Hampden, the past two years, has leased the Glennon Mill, at this place, where they will begin manufacturing in about one month. The change is made in order that the company may increase its production. Cheviots will be manufactured. The Glennon Mill has not been run for some time.

—Massachusetts, Millbury. Work has been resumed at the Lapham Mills, which are now owned by the Millbury Woolen Co. One set of cards is being operated, and more will be started as soon as possible.

—Massachusetts, Millville. We have the report that Clarence Maguire, of Blackstone, will soon start the "Happy Hollow Woolen Mill", in this place. The mill is now undergoing repairs, which are nearly completed. This, we think, is the two-set mill owned by Albert Davis, of the firm of Davis & Spencer, of Maynard, Mass.

—Massachusetts, Newton Lower Falls. W. S. and F. Cordingley, of the Silurian Mills, are making preparations for operating their plant both day and night. These mills have not been run full time for the past two years.

—Massachusetts, West Rutland. The machinery of the Lakeville Woolen Co., at this place, is being started up. It has not been in operation since Jan. 1st.

—New Hampshire, Wilton. The Wilton Woolen Co., C. J. Amadon & Sons, proprietors, are about starting their mill, which has been practically idle for nearly a year.

—Rhode Island, East Greenwich. A dispatch states that Samuel Williams, of Boston, has started up the Phenix Woolen Mill that he recently purchased, and that he will continue to operate the same.

—West Virginia, Clarksburg. The Clarksburg Woolen Mills have resumed operations. Philip Bayard is the manager.

—Wisconsin, Janesville. The Rock River Woolen Mills are running full time, for the first time since 1895.

Mills Shutting Down.

—Massachusetts, Lowell. The Lowell Carpet Co. has reduced its working time to 40 hours per week.

—*Massachusetts, New Bedford. The Oneko Woolen Mills, of* this place, have ceased manufacturing goods.

Knit.

New Mills.

—*Georgia, Union Point. The new mill will be built by the Union Mfg. Co., to take the place of the one that was burned in October last. This company has an authorized capital of $75,000. They will employ about 20 hands in the manufacture of medium hose and half hose. They expect to commence operations by the first of July.

—Missouri, St. Louis. Norval L. Pierce, 3209 Lucas Ave., is thinking of engaging in the manufacture of hosiery, and is investigating the subject. He wants information as to the latest improved machinery in this line. We have referred him to the advertising columns of the TEXTILE WORLD, and would suggest that builders of machinery send circulars.

—New York, Hoosick. The village of North Hoosic is to have a new industry. All arrangements have been completed for the removal of the knitting business of Charles A. Reib & Co., of Troy, a new concern established in '96, to this place, where it will be located in the mill building, situated on the north side of the highway and owned by James G. Byars, Jr.; where the business will be conducted under a new firm name. The building in which they are to locate is a two story structure, 60x50 feet. Water will be the motive power. When in full operation, the new concern will employ from 25 to 30 hands.

—North Carolina, Tyron. L. N. Wilcox & Son are establishing a knitting plant in this place for producing hosiery. It is the intention of the firm to manufacture about 300 dozen pairs daily. Water will be the motive power.

—North Carolina, Wilton. W. N. Harris contemplates establishing a knitting and webbing mill in Wilton.

—Pennsylvania, Harrisburg. J. C. Jennings informs us that he contemplates starting a hosiery and underwear factory at Harrisburg.

—South Carolina, Yorkville. A new knitting mill is said to be assured for Yorkville.

—Tennessee, Lenoir City. A company has been organized here known as the Dixie Mill. They will manufacture hose. Officers have been elected as follows: F. A. Weiss, president; W. H. Hornsby, vice-president; W. B. Davis, secretary, and Samuel Marfield, treasurer. They expect to begin the manufacture of goods about May 1st, 1897, and will employ 20 to 25 hands in the manufacture of ladies' and men's hose, in solid colors, black and tan. They will commence with a capital of $10,000 and 20 knitting machines. The plant will be located in an old cotton mill, that is now idle, and will be operated with water and steam.

Enlargements and Improvements.

—North Carolina, Mayodan. We have a report that the Mayodan Mills contemplate purchasing some new knitting machines.

—South Carolina, Spartanburg. We are informed that the Spartanburg Knitting Mills, at this place, will double the capacity of their plant in the near future. When the company built their mills, they had in view the contemplated enlargement.

Mills Starting Up.

—Massachusetts, Millbury. The Portsmouth Mill, which manufactures underwear, is said to be resuming operations, after a long shut down.

—New Hampshire, Lakeport. The Winthrop Knitting Mills, formerly the Halifax Mills, has again resumed operations.

—New York, Cohoes. The old Standard Mill, formerly operated by Pilling & Scullen, who failed in May, 1896, is to be started by a company not yet formed. The new company will include John Hay, who is now superintendent of the Parsons mill, in this city, John L. Newman, of the National Bank, and other influential men.

—New York, Stillwater. R. & H. Newland have resumed operations at their knitting mill, which has been shut down for about seven months.

—*New York, Waterloo. The Waterloo Knitting Co. has started the machinery in its new mill.

Silk.

New Mills.

—*Pennsylvania, Alburtis. We are advised that P. B. Nuss is at the head of the project that has in view the erection of a new silk mill for Alburtis, concerning which we made mention in our issue of Jan. 23, 1897.

—Pennsylvania, Bristol. Philadelphia parties recently visited Bristol, who, it is believed, contemplate erecting a silk factory therein.

—*Pennsylvania, Carlisle. Concerning the Pennsylvania Silk Co. that we reported would build a new mill at this place, that company now inform us that work on the foundation will be commenced at once, and that they expect to begin the manufacture of goods about June 15th. When completed and in operation, the mill will give employment to 100 hands. The capital of the company is $50,000. W. G. Collins is president, J. W. Place, treasurer, and Adolph Staples, superintendent. 50 new box looms with Jacquard motions will be installed. Fleitnen & Co. will be selling agents. This company recently started a new silk mill at Fleetwood, Penn. Their New York office is at No. 56 Pine Street.

—Pennsylvania, Catasauqua. The Board of Trade has received a proposition from a silk manufacturer looking for the locating of his plant at this place.

—*Pennsylvania, Coatsville. The necessary $20,000 for the new silk mill has been subscribed by the citizens of Coatsville, and a site for the building will be decided on in a few days. This refers to the mill that we reported in December last would be built here for Jesse Shallcrosse.

—Pennsylvania, Edison. $2000 have been subscribed toward the erection of a new silk mill in this place. An organization has been effected, of which Dr. J. B. Stirley is president.

Mills Starting Up.

—Connecticut, Stonington. The Stonington Silk Company are starting up their new looms.

Miscellaneous.

New Mills.

—Pennsylvania, Philadelphia. The new dyehouse of J. R. Foster & Son has been completed and is in operation. They expect to have their finishing department ready to start soon.

Fires.

—Connecticut, Moosup. The Union Cotton Mill of Moosup has been somewhat damaged by fire, which originated in the mule room from some unknown cause.

—Connecticut, New Haven. A fire at the shoddy and waste mill at the corner of Blatchley Ave. and River St., caused a loss of $500, on which, it is understood, there was no insurance. The works were formerly run by the insolvent Beach Warp Co., but we understand that they are now owned by a Mr. Fry, of Ansonia.

—New York, Amsterdam. The mill of the Continental Knitting Company, in this city, of which E. P. Harvey is agent, has been damaged by fire to the extent of $12,000. The loss is partly covered by insurance.

—New York, Oriskany Falls. The storehouse of the Columbia Yarn Mill, operated by H. A. Langley, has been destroyed by fire. The loss will amount to $4000 or $5000.

Failures and Suspensions.

—Maryland, Baltimore. We have a report that Albert and Maria Kittelberger, trading as the Maryland Bleach & Dye Works, and Eugene Fischer, agent of the same, have made an assignment for the benefit of creditors, to Paul Burnett. It is thought that the company will be able to pay its indebtedness. The cause of the assignment is said to be that the firm desires to retire from business.

—Pennsylvania, Philadelphia. The Allegheny Woolen Co., Ltd., weavers of woolen goods, have made an assignment. This concern has no connection with the Allegheny Worsted Mills, manufacturers of worsted yarns.

Facts and Gossip.

—Alabama, Selma. A report states that the Matthews Cotton Mills property is to be sold under a decree from the chancery court.

—Arkansas, Mammoth Springs. The Mammoth Spring Cotton Mill has been sold at public auction. It was bid in by S. P. Reid, of Memphis, for $11,000. Mr. Reid is quoted as saying that he bought the cotton mill individually, but that he is backed by other parties. It is thought that the mill will not remain idle idle.

—Connecticut, Mystic. Randall Brown has succeeded Brown & Lathrop, of the Mystic Line & Rope Co.

—Connecticut, Winsted. The Winsted Hosiery Co. is said to have increased its capital stock from $50,000 to $100,000.

—Georgia, Alice. Thomas Atherton, the surviving partner of W. C. & Thomas Atherton, has asked for a receiver to close up the business of the firm. They manufacture cotton threads.

—Georgia, Cuthbert. Concerning the report that a new cotton mill is being proposed for Cuthbert, Mr. Hood, of that place, waites us that there is no prospect at present that a cotton mill will be built here for some time to come.

—Kansas, Topeka. The Oakland Woolen Mill in Topeka, which was sold to J. G. Fleichman, a lien holder, in September, 1895, has been divided into different rooms which will be let as tenements.

—Kansas, Topeka. All the machinery formerly at the Mid-Continental Woolen Mill has been removed to Rochester, Minn., where it will be set up and operated by C. P. Booth, in his new woolen mill. The Mid Continental Woolen Mill Co. is now out of business.

—Kentucky, Lawrenceburg. The Eagle Mills, operated by W. H. Dustin & Co., are said to be badly wrecked by the recent flood.

—Massachusetts, Auburn. The Auburn Worsted Mill is for sale. The mill, which has been closed for some time, contains five sets of cards, 45 broad Knowles looms, and other necessary machinery. Wilkinson Crossley, of Maynard, Mass., can give particulars.

—Massachusetts, Boston. The Century Hammock Co. has been organized under Maine laws, for the purpose of manufacturing and dealing in textile fabrics and woven goods. The capital stock is $125,000. Joseph H. Mason, of Boston, is the president, and Wm. F. Hersey, of Boston, treasurer.

—Massachusetts, Chelsea. The cordage works which were started up on Jan. 19th have again closed down. In connection with the shut down it is said that negotiations are now pending for the purchase of the Chelsea plant from the Cordage Trust, and Mr. Charles H. Pearson, of Boston, is said to be the probable purchaser.

—Massachusetts, Fall River. The Parker Mills, of this place, write us that they have taken no action on building a new mill, as it has been reported they had.

—Massachusetts, Fall River. We are authorized to state that the item which has been going the rounds of our contemporaries, to the effect that Arnold B. Sanford has recently resigned the presidency of the Sanford Spinning Co., and will head a syndicate that contemplates building mills in Woonsocket, is entirely without foundation. Mr. Sanford has neither resigned the presidency of the Sanford Spinning Co., neither is he interested in any such project as reported.

—Massachusetts, Fall River. We are authoratively informed that the report going the rounds of the papers to the effect that the Iron Works Co. will erect a new mill this summer is not true, and they do not contemplate building any mill at present.

—Massachusetts, Ipswich. Amos Scotton, manufacturer of hosiery and gloves, informs us that he is selling out his machinery.

—Massachusetts, Lake View. We have a report that Elbridge Peirce, of New Bedford, Mass., has purchased land and a water privilege in this place, on which he will build a bleachery.

—Massachusetts, Lawrence. F. Erting shause, manufacturer of dress goods and

cloakings on Lowell Street, Lawrence, writes us that he is selling out his business.

—Massachusetts, Leominster. There is said to be a prospect that the Clinton Absorbent Cotton Co., of Clinton, Mass., will remove to Leominster and occupy the Sawtelle-Morse building on Lancaster St. It is said that the company desire to increase their business and that there are no facilities for doing so in their present quarters.

—Massachusetts, Millbury. The 14-foot fly wheel at the mill of the Millbury Woolen Co, burst recently, doing some $3000 worth of damage to the machinery and building. The mill will be run by water during the placing of a new wheel.

—Massachusetts, Millbury. We are now informed that Augustus C. Molt has bought the dye works of Whitney & Molt, in this town, and that he will continue the business in company with his brothers, Herman and William Molt, under the firm name of Molt Bros. The business was started some 20 years ago by Gustave Molt and Levi L. Whitney, under the firm name of Whitney & Molt, and was continued until a few weeks since, when a failure was precipitated by the financial troubles of Mr. Whitney. Augustus C. Molt, the buyer of the property, has been general manager of the works for the company for many years.

—Massachusetts, New Bedford. A petition was presented in the legislature on the 18th inst., from the Whitman Mills, of New Bedford, asking for authority to increase its capital stock from $700,000 to $2,000,000. This concern was incorporated in 1895, and is engaged in the manufacture of staple and fancy cotton cloths. They now operate 60,000 ring spindles and 1708 looms. The enlargement of the plant was decided upon some time ago, and it is intended to use the increased capital to this end.

—Massachusetts, Pittsfield. We are informed that Arnold & McKendrick, of Stafford Springs, who have been in communication with the Board of Trade regarding the removing of their card clothing business to this city, have given up the idea of coming here, and that they will remain where they are for the present, but that the Farnsworth Co., which is in a similar business, will locate in Central Block.

—Massachusetts, Shelburne Falls. Concerning the sale of the Mahew & Wilkins Silk Co.'s mill at this place, we are authoratively informed that the real estate was purchased by George W. Halligan, of Shelburne Falls, and the machinery by F. H. Mayhew, of Wortendyke, N. J.

—Massachusetts, Spencer. We have a report that Newton Darling is to sell his woolen mills in Spencer, in order that he may concentrate his attention on the business of the Lapham Mills, at Millbury, which he will run as president and treasurer of the newly organized Millbury Woolen Mill Co. The three mills will be offered for sale on the 20th inst.

Mexico, Nohualac. A factory is to be built at the foot of the volcano of Ixtaleeihuatl, and preliminary work has already been begun. Silk, woolen and cotton goods will be manufactured, and employment will be given to 2000 workmen. Robert McLean is at the head of the enterprise.

—Michigan, Corunna. We have a report that the woolen mill operated by Amsden & Wheeden, has been completely wrecked by an overflow of water.

—Michigan, Northville. The negotiations which have been pending for some time between Messrs. Fell & Son, of the Rawsonville Woolen Mills, at Rawsonville, Mich., and some Northville gentlemen, have been completed, whereby the factory will be moved to this place within a short time, and will be located in the Columbia Refrigerator Co.'s building.

—New Jersey, Paterson. The Novelty Silk Printing Co., who operated an establishment on Van Houten St., has gone out of business.

—New Jersey, Paterson. The certificate of incorporation of the Wright-Smith Silk Mfg. Co. has been filed. The company will begin business with $15,000 paid in. The authorized capital of the firm is $30,000.

—New York, Averill Park. Articles of incorporation of the Faith Knitting Co. have been filed. The company's principal office will be located at Averill Park. The business will consist of the manufacture and sale of knit goods. The company is organized to operate the old Knowlson & McConihe mills, at this place, which were recently purchased by Peter McCarthy, of Troy, N. Y. The capital stock is $60,000. Wm. D. Mahoney will be the superintendent of the factory, which will be in full operation in a few weeks.

—New York, Cohoes. Walter N. Bochlowitz, of the firm of Bochlowitz & Son, owners of the Riverside Mill in this city, has had his name changed by legal proceedings to Walter N. Buck. This he did, owing to his belief that his name was long, hard to spell, and a detriment to him and his business affairs.

—New York, Cohoes. A report states that the Levy Bros., manufacturers, of 71 Greene St., New York, and Paterson, N. J., have written the Business Men's Association, of Cohoes, for inducements to locate a silk mill, to employ 400 hands, in Cohoes. No definite action has yet been taken concerning their proposition, but it is likely that it will be favorably considered.

—New York, Cohoes. The Clifton Warehouse Co. has been organized in this city and incorporated. The first directors are William T. Ford, John H. Murphy and Frank Godfrey. It is their purpose to furnish storage room for knit goods.

—New York, Cohoes. The affairs of Pilling & Scullen have been closed up. This firm, who formerly operated the Standard Mill in the manufacture of merino and wool underwear, made a general assignment in May, 1896, and in September last an action was brought against them by J. Reifsnyder, Son & Co., wool merchants of Philadelphia, who were creditors, to set aside the assignment on the ground of fraud, and a decision was rendered in favor of the plaintiffs, whose claim has now been paid by the referee. It is said that the former employees will lose $2400 in unpaid wages.

—New York, Hawthorne. We have a report that the Hudson Silk Co., of Middletown, N. Y., will move its plant to Hawthorne, in the near future. The cause assigned for the change is that the concern will save a large sum in freight charges and water rents.

—New York, Little Falls. The Saxony Knitting Company, manufacturers of underwear garments, blankets and knit goods, have been incorporated with a capital of $135,000. The directors are Charles King, Josiah M. Rankin and Sylvanus J Waters, Jr.

—New York, Little Falls. It is reported that Snyder & Fisher, builders of knitting machinery and bicycles, are financially embarrassed.

—Rhode Island, Central Falls. M. Quinham, formerly with the Lonsdale Company at Lonsdale, R. I., has purchased the business of the Jackson Roll covering Company of this place.

PERSONAL RECORD.

Cotton.

Aaron Handy, who for many years has been in charge of the spinning for the Attawaugan Company, at Killingly, Conn., has resigned, and is now living at Putnam Heights, Conn.

Edward Robinson formerly overseer of weaving in the Suffolk Mills, of the Tremont and Suffolk mills Corporation, Lowell, Mass., has been placed in charge of the weaving in the Lawrence Mill, which is operated by the same company.

J. A. Shinn overseer of carding and spinning for the China Grove (N. C.) cotton mill company, is to have charge of the Hosiery yarn mill which that company is about to start.

M. F. Hornbuckle will once more resume his former position as overseer of weaving with the Cabarrus Cotton Mill, Concord, N. C.

B. H. Wetherbee has accepted a position with the Fitchburg Manufacturing Company Fitchburg, Mass., where he will have charge of the dyeing department.

C. B. Bennett has resigned as superintendent of the Queen City Cotton Mills, Burlington, Vt.

H. W. Kimball, superintendent of the W. A. Slater Cotton Mill, Jewett City, Conn., has been transferred to the Slatersville Mills, Slatersville, R. I.

John F. Curtis has returned to his old position as boss dyer with the Barstow Thread Company, of Pawtucket, R. I.; he has for a time been at Bristol, R. I.

John F. Worrall has severed his connection with the Hamlet Mill, at Woonsocket, R. I., where for a long time he has held the position of superintendent. The proprietor of the mill, Col. Frank Harris, will assume the duties of superintendent.

John Smith has been promoted to the position of superintendent of the Chase Mill, of Fall River, Mass. Mr. Smith has held a position as overseer of weaving with this company for the past twenty years.

Wm. McColl has secured a position as section hand in the spinning department of the Ada Cotton Mill, of Charlotte, N. C.

P. E. Greenhill has resigned his position as overseer of spinning at the Alpa Cotton Mill, Charlotte, N. C.

Geo. F. Ivey is to be the superintendent of the Southern Cotton Mills, at Bessemer City, N. C.

Albert Bowersot has been promoted from the position of overseer of weaving to that of superintendent, of the Columbia Mills, Columbia, S. C.

Mr. Colby E. Lewis has resigned the position that he has filled for the past eight years as superintendent with the Centreville Cotton mills, at Centreville, R. I., and has accepted the position of superintendent of the W. A. Slater Cotton Mills of Jewett City, Conn. Mr. Lewis commenced mill life in the Bates Mills of Lewiston, Me.; from there he removed to Three Rivers, Mass., where he was for a time engaged in setting up and starting new box looms. From there he went to Lawrence, Mass., and accepted a position as section hand in the weave room of the Everett Mills, with which company he remained for twelve years, during which time he was successively promoted to the position of second hand and later to that of overseer; finally he accepted a position at Manville, R. I., where he had charge of all the weaving in the Manville Cotton Mill, where he remained until his departure for Centreville.

Woolen.

M. H. Feeley, for several years overseer of the dyeing department at the Pontoosuc Woolen Co.'s mill, Pittsfield, Mass., has resigned his position and gone to Newark, N. J., where he has accepted a similar position.

Michael Maher, Jr., formerly with the Globe Mills, Montreal, Que., is now engaged in a mill at Carleton Peace, Ont.

B. F. Stearns has resigned as overseer of the machine shop at the Dexter Woolen Mills, Dexter, Maine. He will try farming.

William G. Brown has accepted the paymaster's position at G. C. Moore's Mills, North Chelmsford, Mass. He was recently connected with the "Mail," of Lowell, Mass.

C. H. Billings has accepted a position with the Wytheville (Va.) Woolen Mills, where he has charge of carding and spinning. He was formerly at Kelley, Va.

Arthur Pillsbury has accepted a position as overseer of finishing for the Edward G. Steel & Co. at Bristol, Penn.

E. Blackwood, a graduate of the Philadelphia textile school, has accepted a position as designer with Edward T. Steel & Co., Bristol, Penn.

William O'Brien is now overseer of dyeing ing in Trenton, (N. J.) Worsted Mills.

James Wall has accepted a position with the Roberts Worcester Mill, Robertsford, N. J., where he will have charge of finishing.

Thomas Plouff, formerly of the Dundee Woolen Company, Passaic, N. J., has accepted a position with the Kimball Woolen Company, at Huntington, Mass.

Geo. Ormiston is now overseer of dyeing in the Passaic (N. J.) Woolen Mill.

Watson LeBar is now in charge of the finishing department of the Dundee Woolen Company, at Passaic, N. J. He was formerly with the Kitson Mfg. Co., at Stroudsburg, Pa.

Joseph Galvor has accepted a position as overseer of dyeing with the Seneca Falls Woolen Mills, of Seneca, N. Y. He was at one time with the Raritan (N. J.) Woolen Co., where he held a similar position to his present one.

Henry Thompson, a native of Danielson, Conn., but who has for several years past resided at Wauregan, Conn., has been appointed paymaster at the Quinebaug Mill, in Danielson.

Edwin Millett has resigned the overseer's position of weaving in B. B. & R. (Knight Cotton Mill at Readville, Mass.

Harry K. Drew has accepted a position with the Naumkeag Cotton Mills at Salem, Mass., as overseer of spinning. He has for a long time held a like position at the Blackstone (Mass.) Cotton Mill.

Wm. Owens is superintendent at the Elm Grove Cotton Mill, Lincolnton, N. C.

T. B. Farmer, has succeeded C. E. Evans as superintendent of the carding and spinning at the Walhalla (S. C.) Mill.

R. Bruce Beard is now superintendent of the Granite Falls (N. C.) Cotton Mill. He was formerly overseer of spinning at Bessemer City, N. C.

Frank Hamilton has accepted a position as overseer of spinning at Clinton, S. C. He was lately with the Maginnis Mills of New Orleans, La., where he held a similar position.

Jas. E. Buice, formerly with the Whitney (S. C.) Cotton Mills, is now with the Gaffney (S. C.) Cotton Mills.

Philip A. Matthewson, superintendent of the Chase Mills of Fall River, has accepted the superintendent's position with the King Philip Mill in the same city. He will assume his new position April 1, '97.

A. A. Sweet has resigned the superintendency of the King Philip Mill at Fall River, Mass.

Thomas Stone, who, for several years past, has held the position of overseer of weaving in the King Philip Mill, Fall River, Mass., has resigned and accepted a position in St. John, N. B.

M. J. Ranks, superintendent of carding at the Tremont & Suffolk Mills, Lowell, Mass., has tendered his resignation.

William Smith, for the past fourteen years overseer of carding and combing for the Clark Mile End Thread Company, at Newark, N. J., has resigned, and accepted a position with the Aiken Mfg. Co., of Bath, S. C., where he will have charge of all their carding and spinning.

A. L. Stutts is now with the Union Mfg. Co., of Union, S. C. He was formerly with the Pascolet Mfg. Co., of Pascolet, S. C.

David Bleasley has severed his connection with the Manhattan Print Works, of Passaic, N. J.

Frank Page, for a long time with the Statesville (N. C.) Cotton Mills, is now with the Rockingham (N. C.) Mills.

Walter D. Larzelere has been appointed selling agent of the Philadelphia office for the River Spinning Co., of Woonsocket, R. I.

Peter McNally has accepted the overseership of the mule spinning department for the Hebronville Mfg. Co., Hebronville, Mass. He was recently with the Grosvenordale Company, at No. Grosvenordale, Mass.

Samuel Chadwick has accepted a position with the Middlesex Mills, of Lowell, Mass., where he will have charge of the finishing department; formerly, for many years, with the Washington Mills, of Lawrence, Mass., where he held a similar position.

Jeremiah Wilcox, formerly with the American Axe & Tool Co., of East Douglas, Mass., has accepted a position as master mechanic with the Hamilton Woolen Co., Southbridge, Mass.

Henry Barker has resigned as overseer of weaving with the Lorraine Manufacturing Company, of Saylesville, R. I., which position he has held for many years.

Joseph Malone, formerly with Sevil Scofield & Co., at Manayunk, Pa., is now with the Washington Mills, at Lawrence, Mass., where he has charge of wet and dry gigging.

Edward Fanning is once more in charge of designing with the Union Mills, of Pascoag, R. I.

M. O'Brien has resigned his position as overseer of dyeing for Roy & Co., West Troy, N. Y., and has gone to Rochester, N. H.

John E. Richardson is back in his old position as overseer of dyeing for Roy & Co., West Troy, N. Y.

John J. Cobb, has resigned his position as overseer of carding at Mapleville, R. I., and has gone to Oak Valley, where he will hold a similar position.

M. Jepson has accepted a position as overseer of carding at North Adams, Mass. He was formerly at Vassalboro, Maine.

James Woodhouse has resigned his position as overseer of carding, at North Andover, Mass.

David Robinson has accepted a position as overseer of weaving with the Lorraine Mfg. Company, at Saylesville, R. I.

Thomas Odell, overseer of carding for the Staffordville (Ct.) Woolen Co., has resigned.

Mr. Damon, recently assistant superintendent at No. Andover, Mass., has been promoted to the superintendent's position of the Stevens Mill at Franklin Falls, N. H.

E. C. Washburn has accepted the position of overseer of carding for the Staffordville (Conn.) Woolen Co.

M. S. Dixon, who recently resigned his position as superintendent of the Franklin Mills, of Franklin Falls, N. H., proposes to take a trip to Europe.

Henry Barker has resigned the position as overseer for the Lorraine Mfg. Co., Pawtucket, R. I. He had held the position for 12 years.

Knit.

William Tierney, a brother-in-law of Wm. Moore, has been appointed superintendent of the Granite Mill, owned and operated by the Wm. Moore Knitting Co., Cohoes, N. Y.

Charles F. Land has resigned his position as superintendent of the Granite Mill, in Cohoes, N. Y.

Geo. W. Hewett, formerly at Schenectady, N. Y., has been engaged to superintend the Michigan Central Knitting Mills, at Centreville, Mich.

James H. Masters has resigned the position of pay master at the Victor Knitting Mills, Cohoes, N. Y.

Frederick Zeh has accepted the overseership of the card room at the Halcyon Mill, Cohoes, N. Y. He recently held a similar position with the Atlantic Mill, same city.

Andrew Haggerty has accepted a position as overseer of knitting in the Granite Mill, Cohoes, N. Y. He formerly held a similar position at the Mohawk Mill, same place.

E. H. Steenburg has accepted the position of paymaster with the Victor Knitting Mills, of Cohoes, N. Y.

Eugene Sullivan has accepted a position as overseer of spinning at the American Mill, Cohoes, N. Y.

Alizarine Black

(PATENTED)

Distinguished from all other blacks by the acid test . . .

It is an acknowledged fact that woolen goods for men's wear of American manufacture, due to the more general use of Alizarine Dyes (including the Alizarine Black), are faster in color and therefore give better service to the public than the foreign goods. This is of special importance in view of the fact that our climate with the clear skies and bright sunshine is more trying to colors than in England, Germany or France

Wm. Pickhardt & Kuttroff

NEW YORK

James Heslin will have charge of the carding department in the American Mill, Cohoes, N. Y.

John Nugent has accepted the position of overseer of rib knitting in the American Mill, at Cohoes, N. Y.

Charles Carroll has been appointed superintendent of the American Mill, at Cohoes, N. Y.

Mr. Peter McCarthy, of Troy and Cohoes, N. Y., is president of the new Faith Knitting Company that has been organized at Averill Park, to operate the Beverwick and McConihe Mills, at that place.

Wm. D. Mahoney, superintendent of the Troy Waste Manufacturing Co.'s plant, at Cohoes, N. Y., has been appointed secretary and superintendent with the Faith Knitting Co., at Averill Park, N. Y.

John Towle, of Waterford, N. Y., has accepted a position as overseer of carding with the Faith Knitting Co., Averill Park, N. Y.

Thomas Neeson, Waterford, N. Y., has accepted a position as boss knitter with the Faith Knitting Co , Averill Park, N. Y.

C. W. Holland, who recently held the position of superintendent, at the Buell Mills, of Tilton, N. H., is now in charge of a knitting mill in North Carolina.

Silk.

Philip Bertrand has resigned the position of overseer of dyeing for M. Heminway & Sons, Watertown, Conn., and has gone to France for his health. He has had charge of dyeing for the above concern during the past twelve years.

Albert Lightfoot is now in charge of the dyeing department with Gudebrod Brothers at Windsor Locks, Conn.

Uriah Benn has resigned the position of superintendent of weaving with the Standard Silk Co., Philipsburg, N. J.

Miscellaneous.

Charles A. Haynes has resigned the position that he has held for the past thirty years as superintendent of the Saco Water Power machine shops, at Biddeford, Maine.

Gilman P. Littlefield, for many years an overseer for the Saco Water Power machine shops, Biddeford, Me., has been promoted to the position of superintendent.

Julius Morrell has resigned his position at the Clyde Print Works, at River Point, R. I., in order to engage in the grocery business.

Harry W. Wild has been selected by William Wood & Company, dry goods commission merchants, to represent them in the sales department at their New York office. He has been in their employ since 1880.

Maxime La Fountain, Jr., has been appointed superintendent of the Woonsocket Napping Machine Company, of Woonsocket, R. I.

Deaths.

William Lawlor. Was employed in Bleakie's Woolen Mill, Hyde Park, Mass.

E. Irvin Caswell, 40, of Manchester, N. H. Deceased recently held a position as overseer of the cloth hall at the Jefferson Mill in Manchester.

Continued on page 125.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Architects and Mill Engineers.
Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Paterson, N. J.

Automatic Boiler Feeds.
D'Este & Seeley Co, 29 Haverhill St, Boston

Balling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark N. J.

Bandings.
See under Yarns.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Danforth Belting Co, 221 Chestnut St, Phila, Pa.
Fell, Geo. & Son, Bolton, England.
Standard Mill Supply Co, 77 Exchange Pl, Providence, R. I.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Danforth Belting Co, 221 Chestnut St, Philadelphia, Pa.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Roessler & Hasslacher Chemical Co, 73 Pine St, New York.

Bobbin Covers.
Hegeman, John, Amsterdam, N. Y.

Bobbins, Spools, Shuttles, Etc.
Standard Mill Supply Co, 77 Exchange Pl, Providence, R. I.
Woonsocket Shuttle Co, Woonsocket, R. I.

Boiler Compounds.
Imperial Chemical Co, 432 Market St, Phila, Pa.
Lord, G. W, 316 Union St, Phila, Pa.

Boxes, Paper.
Palmer, J. S, 35 Wistar St, Germantown, Pa.

Boxes, Wooden.
Pearson, J. T, Kensington, Pa.

Braids.
See Tapes and Braids.

Braiding Machines.
Thun & Janssen, Reading, Pa.

Burr Pickers.
Atlas Mfg. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester, Mass.
Sargent's, C. G., Sons, Graniteville, Mass.

Card Clothing.
Ashworth, Elijah, Fall Biver, Mass.
Leigh, Evan A, 35 Mason Building, Boston.

Card Feeds.
Atlas Mfg. Co , Newark, N. J.
Kitson Machine Co, Lowell, Mass.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Calico Printers' Machinery and Supplies.
New Bedford Copper Co, New Bedford, Mass.
See also Dyeing, Bleaching Machinery, etc.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester, Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Crompton Loom Works, Worcester, Mass.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A, & Son, Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Chemicals.
De Ronde, A, & Co, 254 Front St, New York.
Roessler & Hasslacher Chemical Co, 73 Pine St, New York.

Chemist.
Huntington, Dr. H, 159 Front St, New York.

Copper Print Rollers.
New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.
Brabender, Chas, Sr, Paterson, N. J.
Oat, Jos. & Sons, 232 Quarry St, Phila, Pa.

Cotton.
Blaisdell, S, Jr, Co, Chicopee, Mass.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Ashworth, Elijah, Fall River, Mass.
Atherton Machine Co, Lowell, Mass.
Crompton Loom Works, Worcester, Mass.
Curtis & Marble Machine Co, Worcester Mass.
Draper Company, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Kitson Machine Co, Lowell, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lowell Machine Shop, Lowell, Mass.
McKerrow & Bennett, 31 State St, Boston, Mass.
Mason Machine Works, Taunton, Mass.
Providence Machine Co, Providence, R. I.
Saco Water Power Machine Shop, Biddeford, Me.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Thun & Janssen, Reading, Pa.
Whitin Machine Wks, Whitinsville, Mass.
Woonsocket Machine & Press Co, Woonsocket, R, I.

Cotton Openers and Lappers.
Atherton Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kitson Machine Co, Lowell, Mass.
McKerrow & Bennett, 31 State St, Boston, Mass.

Cotton Webbing.
Witter, H. M, & Co, Worcester, Mass.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Damper Regulators.
D'Este & Seeley Co. (Curtis), 29 Haverhill St, Boston, Mass.

Designers.
Fresnel, Gustave, 125 W. 56th St, N. Y.
Hand, F, & Co, Paterson, N. J.

Dryers.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dyeing, Bleaching and Finishing.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Kensington Dye Works, Kensington, Pa.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
Birch Bros., Somerville, Mass.
Butterworth, H. W, & Sons Co, Phila, Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Co, 22 and Wood Sts, Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Lincoln & Co, 54 Arch St, Hartford, Ct.
Parks & Woolson Machine Co, Springfield, Vt.
Phenix Iron Foundry, Providence, R. I.
Rockwell, W. S. & Co, 26 Cortlandt St, N. Y.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Woonsocket Machine & Press Co, Woonsocket, R. I.

Dye Sticks,
Haedrich, E. M, 311 1-2 Walnut St, Phila, Pa.

Dyestuffs and Chemicals.
Anchor Color Mfg. Co, 464 Cherry St, New York.
Ashley, T. C, & Co, 145 Milk St, Boston.
Atteaux, F. E, & Co, 172 Purchase St, Boston, Mass.
Beach & Co, Hartford, Ct.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Corey, S. J, 273 Congress St, Boston.
De Ronde, A, & Co, 254 Front St, New York.
Farbenfabriken of Elberfeld Co, 77 William St, N. Y.
Geisenheimer & Co, 189 Front St, New York.
Hanna-Schoellkopf Co, Philadelphia, Pa.
Harway Dyewood & Extract Mfg. Co, 184 Front St, N. Y.
Innis & Co, 120 William St, New York.
Jaeck Bros, J, 62-68 No. 11th St, Brooklyn, N. Y.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y.
Johnson, Wm. G, & Co, Uncasville, Conn.
Kalbfleisch, Franklin H, Co, New York.
Kalle & Co., 77 John St., N. Y.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 79 Murray St., N. Y.
Matheson, W. J, & Co, 178 Front St, N. Y.
Merrimac Chemical Co, Boston, Mass.
Nashoba Co, Ayer, Mass.
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Phillips (Moro) Chemical Co, 131 S. 3d St, Phila., Pa.
Pickhardt & Kuttroff, New York.
Polhemus, Henry, 66 Maiden Lane, N. Y.
Roessler & Hasslacher Chemical Co, 73 Pine St, New York.
Sharpless Dye Wood Ext. Co, 22 N. Front St, Phila, Pa.
Stamford Mfg. Co, 157 Maiden Lane, N. Y.
Stone & Ware Co, The, 157 Maiden Lane, N. Y.
Sykes & Street, 85 Water St, N. Y.

Dyers and Finishers.
Bay State Dyeing & Finishing Co, North Andover Depot, Mass.
Boston Finishing Works, Williamstown Mass.
Cranston Worsted Mills (yarns), Bristol R. I.
Firth & Foster Co, Kensington, Pa.
Greenwood, R, & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket, R. I.
Kensington Dye Works, Kensington, Pa.
Oakdale Dye Works, 913 W. York St, Phila, Pa.
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Warren, W, Thread Works, Westfield, Mass.

Dyers' Clogs.
Wildman, Jos, & Co, 1908 N. Front St, Phila.

Electrotyping and Printing.
J. J. Ryder & Co, 210 Westminster St, Providence, R. I.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Graves Elevator Co, Rochester, N. Y.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Salem Foundry & Machine Shop, Salem, Mass.

Engineers, Electrical.
Smeallie Bros, Amsterdam, N. Y.

Engineers, Mechanical.
Berlin Iron Bridge Co, E. Berlin, Ct.
Ferguson, John W, Paterson, N. J.
Smeallie Bros, Amsterdam, N. Y.

Engraving on Wood.
Ryder Co, J. J, 210 Westminster St, Providence, R. I.

Express Money Orders and Travelers' Cheques.
American Express Co, offices in every city

Factory Sites.
Dolge, Alfred, Dolgeville, N. Y.
Illinois Central R. R, 506 Central Station Chicago, Ill.
Lyndonville (Vt.) Board of Trade.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Phœnix Iron Foundry, Providence, R. I.
Smeallie Bros, Amsterdam, N. Y.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River. Mass.

Fuel Oil Furnaces.
Rockwell, W. S, & Co, 27 Cortland St, N. Y.

Fulling Mills for Knit Goods.
Scott, H. W, Bennington, Vt.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.

Gas Singeing Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Rockwell, W. S. & Co, 26 Cortlandt St, N. Y.

Gear Cutting Machine.
Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E, Co, New London, Conn.

Heating.
See Ventilating.

Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Index.
Burt Index Co, 336 Asylum St, Hartford, Conn.

Insurance (Employers' Liability).
Employers' Liability Assurance Co, 28 Central St, Boston, Mass.

Knit Goods Edgings, Trimmings, etc.
Byram, F. A, Germantown, Pa.

Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Friedberger, C, Edgings, Germantown, Phila, Pa.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Krout & Fite Mfg. Co, 2632 Mascher St, Phila.

Knit Goods Finishing Machines, Crochet, Etc.

Champion Sewing Machine Co, 1819 N. 5th St, Phila, Pa.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Von Buchwald, W. C, 120 N. 7th St, Philadelphia, Pa.

Knitting Machine Cylinders.

Ashman, Stephen A, 3 Fetter Lane, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Stanton & Lewis, 318 Branch St, Phila, Pa.

Knitting Machinery.

Ardrey, S. B, & Sons, Bristol, Pa.
Boss Knitting Machine Co, 7th and Walnut Sts, Reading, Pa.
Brinton, H, & Co, 213 Race St, Phila, Pa.
Campbell & Clute, Cohoes, N. Y.
Champion Sewing Machine Co, N. W., cor. American and Diamond Sts, Phila, Pa.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Co, South Bethlehem, Pa.
Hepworth & Co, Lehigh Ave. and Mascher St, Phila, Pa.
Hodgson & Holt, Laconia, N. H.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos (Cutters, etc.), Cohoes, N. Y.
Keystone Automatic Napping Machine Co, Spring City, Pa.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
Mueller, A, 760 Lexington Ave, Brooklyn, N. Y.
National Automatic Knitter Co, Cherry St, Philadelphia, Pa.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Payne, G. W. & Co, Pawtucket, R. I. (Winders.)
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Standard Machine Co., 508 Minor St., Philadelphia, Pa.
Taylor, James, 835 Arch St, Phila, Pa.
Union Raveller Co, Troy, N. Y.

Knitting Needles.

Breedon, Wm, & Son, Amsterdam, N. Y.
Corey, Wm, Co, Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Lydall, H, & Foulds, Manchester, Conn.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Star Needle Co, New Britain, Conn.
Stoops, H. R, & Co, 66 No. 4th St, Phila, Pa.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Laboratory Outfits.

Bullock & Crenshaw, 528 Arch St Phila, Pa.

Looms.

Crompton Loom Works, Worcester, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Riehl, Henry & Son, 1130 Charlotte St. Philadelphia, Pa. (For narrow fabrics.)
Whitin Machine Works, Whitinsville, Ms,
Woonsocket Machine & Press Co, Woonsocket, R. I.

Loom Picker Manufacturers.

Crompton Loom Works, Worcester, Mass.
Loom Picker Co, Biddeford, Me.
Novelty Loom Picker Works, 3-7 So. 48th St Philadelphia, Pa.

Lubricators.

Dixon, Jos, Crucible Co, Jersey City, N. J.

Lumber.

Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.

Gerry, George, & Son, Athol, Mass.

Machinery Dealers.

Schofield, Geo. L, 123 N. Front St, Phila,
Scott, James, 123 No. Front St, Phila, Pa.

Machinists' Tools.

Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E. Co, New London, Conn.

Mails.

Walder, J, Paterson, N. J.

Manufacturing Chemists.

Kalbfleisch, Franklin H, Co, New York.

Measuring and Folding Machines.

Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 54½ Harmon St, Worcester Mass.

Mill Builders and Engineers.

Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Paterson, N. J.

Mill Supplies.

American Supply Co, Providence, R. I.
Ashoff, Charles, 191 Berks St, Phila, Pa.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Hill, Jas, Mfg. Co, Providence, R. I.
New Jersey Car Spring & Rubber Co, Jersey City, N. J.
Standard Mill Supply Co, 77 Exchange Pl, Providence, R. I.
Thurston, A. G, & Son, Fall River, Mass.
Watson, L. S, Mfg. Co, Leicester, Mass.

Napping Machines.

American Napping Machine Co, Williamstown, Mass
Ardrey, S. B, & Sons, Bristol, Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.
Parks & Woolson Machine Co, Springfield, Vt.
Woonsocket Napping Machine Co, Woonsocket, R. I.

Oilless Bearings.

N. American Metalline Co, 62 W. Ave. and 3rd St, Long Island City, N. Y.

Paints.

American Fire Resisting Paint Co, 17 Broadway, New York.
Devoe & Reynolds, Fulton and Williams St, New York.

Pantagraphs for Mill Engraving.

Johnson, C. A, & Co, 22 Dey St, New York.

Patent Solicitors.

Crosby & Gregory, 34 School St, Boston, Mass.
Wright, Brown & Quinby, 53 State St, Boston, Mass.

Penstocks.

Dalrymple, George, Fair Haven, Vt.

Peroxide of Sodium.

Roessler & Hasslacher Chemical Co., 73 Pine St, New York.

Picker Sticks.

Loom Picker Co., Biddeford, Me.

Picking, Carbonizing and Garnetting.

Garfield Woolen Co, Garfield, N. J.

Pipe Covering (Magnesia).
Keasby, R. A., 54 Warren St, New York.
Keasby & Mattison Co. Ambler, Pa.
Nightingale, S. C, & Childs, Atlantic Ave, Boston, Mass.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Cresson, Geo. V, Co, Philadelphia, Pa.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kilburn, Lincoln & Co, Fall River, Mass.
Smeallie Bros, Amsterdam, N. Y.

Presses.
Crawford, J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Pownall, F. H, Iron Works, Jamesburg, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Pressure Regulators for Steam and Water.
D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass.

Printers and Embossers.
Novelty Textile Printing Co, 525 W. 24th St, New York.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Kalbfleisch, Franklin H, Co, New York.
Smeallie Bros, Amsterdam, N. Y.

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Gowdey, J. A, & Co, Providence, R. I.
Lathrop, H. V, Danielson, Conn.
Loom Picker Co, Biddeford, Me.
Walder, J, Paterson, N. J.

Ribbons.
Cheney Bros, S. Manchester, Ct.
Friedberger, C, Germantown, Pa.

Roller Skins.
Fell, Geo, & Son, Bolton, England.

Roofing, Gravel, Slag and Composition.
Armitage Mfg. Co, Richmond, Va.
Warren Chemical & Mfg. Co, 45 Fulton St, New York.

Roofing, Paint and Paper.
Armitage Mfg. Co, Richmond, Va.

Roving Cans and Sheet Metal Work for Mills.
Hill, Jas, Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Saddles, Stirrups and Levers.
Dixon Lubricating Saddle Co, Bristol, R. I.

Schools.
Lowell Textile School, Lowell, Mass.
Philadelphia Textile School, Phila, Pa.

Sewing Machines and Supplies.
Birch Bros., Somerville, Mass.
Champion Sewing Machine Co, N. W., cor American and Diamond Sts, Phila, Pa
Curtis & Marble Machine Co, Worcester, Mass.
Dinsmore Mfg. Co, Salem, Mass.
Frame, Gibbons, 2nd and Diamond Sts, Phila, Pa.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Stoops, H. R, & Co, 66 No. 4th St, Phila, Pa.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co, Cohoes, N. Y.
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Crompton Loom Works, Worcester, Mass.

Singe Plates.
New Bedford Copper Co, New Bedford, Ms.

Sizing.
American Glutrose Co. Penn Mutual Bldg, Phila, Pa.

Skylights (Metal).
Van Noorden & Co, Boston, Mass.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.

Soaps.
American Soap & Washolene Co, Cohoes, N. Y.
Holbrook Mfg. Co., 466 Washington St., N. Y.
India Alkali Works, Boston.

Spindles.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Ward & Vandegrift, Elmer, N. J.
Whitin Machine Wks, Whitinsville, Mass.

Spinning Cylinders.
Hill, Jas, Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Rings.
Draper Company, Hopedale, Mass.
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinners' Supplies.
Dixon Lubricating Saddle Co, Bristol, R. I.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Steam Boilers.
Brown, C. H, & Co, Fitchburg, Mass.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Damper Regulators.
D'Este & Seeley Co, 29 Haverill St, Boston Mass.

Steam Engines.
Brown, C. H, & Co, Fitchburg, Mass.
Hooven (The), Owens & Reutechler Co, Hamilton, O.
Newburgh Ice Machine & Engine Co, Newburgh, N. Y.
Toomey, Frank, 131 N 3d St, Phila, Pa.

Steam Separators.
D'Este & Seeley Co. (Curtis), 29 Haverill St., Boston.

Steam Specialties.
D'Este & Seeley Co, 29 Haverhill St, Boston.

Steam Traps.
D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass. (return float and expansion).
Haines, W. S. 136 So. 4th St, Phila, Pa.

Steel Castings.
Chester Steel Castings Co, 407 Liberty St Phila, Pa.

Tanks, Tubs and Vats.
Brabender, Chas, Sr, Paterson, N. J.
Corcoran, A. J, 11 John St, N. Y.
Cypress Lumber Co, Apalachicola, Fla.
Cypress Tank Co, Bridgeport, Florida.
Hall, Amos H, No. 2nd above Cambria, Phila, Pa.

Oat, Jos, & Sons, 232 Quarry St, Phila, Pa.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa

Tapes and Braids.

Fleming & Chapin, 215 Church St, Phila, Pa.
Kenyon, John J, Pawtucket, R. I.
Perseverance Mills, 2632-40 Mascher St Phila, Pa.
Witter, H. M. & Co, Worcester, Mass.

Teasels.

Kellogg, Thos. C, Skaneateles, N. Y.
Kellogg, Wm, W, Skaneateles, N. Y.
McLaughlin Bros, Skaneateles Falls, N. Y.

Temperature Regulators.

D'Este & Seeley Co, 29 Haverhill St, Boston.
Haines, W. S, 136 So. 4th St, Phila, Pa.

Tentering Machines.

See Dyeing, Bleaching Machinery, Etc.

Tension Pulleys.

N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Testing Machines.

Howard, Geo. C., 1783 Barker St., Phila., Pa

Traveler's Cheques.

American Express Company.

Turbines.

Burnham Bros, York, Pa.
Christiana Machine Co, Christiana, Pa.
James Leffel & Co, Springfield, Ohio

Valves.

D'Este & Seeley Co, 29 Haverhill St, Boston, Mass.

Ventilating Apparatus.

Berry, A. Hun, 23 W. 1st St, Boston, Mass.
New England Heating & Ventilating Co, Providence, R. I.
Pancoast Ventilator Co, Phila, Pa.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.
Van Noorden & Co, Harrison Ave, Boston, Mass.

Washers (Cloth).

Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.

Watchman's Clock.

Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Nanz & Co, 116 Chambers St, New York.

Water Pressure Regulators.

D'Este & Seeley Co, 29 Haverhill St, Boston.

Water Wheels.

Burnham Bros, York, Pa.
Christiana Machine Co, Christiana, Pa.
Humphrey Machine Co, Keene, N. H.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.

Cohoes Foundry & Machine Co, Cohoes N. Y.
Leffel, James & Co, Springfield, Ohio.
Lombard Water Wheel Governor Co, 61 Hampshire St, Boston.
Replogle Governor Works, Akron, Ohio.

Winders. (Hosiery.)

Payne, G. W. & Co, Pawtucket, R. I.
Universal Winding Co, 226 Devonshire St, Boston.

Wool.

Lyon, John H, & Co, 12 Reade St, N. Y.
Webb, Chas. J. & Co, 156 N. Front St. Phila, Pa.

Wool Cleaning Compound.

India Alkali Works, Boston.

Wool Combing Machinery.

Crompton Loom Works, Worcester, Mass.

Wool Extracts.

Daly, Jas. E., & Co., 105 River St., Paterson, N. J.
Garfield Woolen Co, Garfield, N. J.
Muhlhauser, F, Co, Cleveland, Ohio.
Sullivan, R. T, 155 Federal St, Boston, Mass.

Wool and Waste Dusters.

Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Stillman-Randall Machine Co, Westerly, R. I.

Woolen Machinery.

Altemus, W. W, & Co, 2816 N. 4th St, Phila Pa.
Atlas Mfg. Co., Newark, N. J.
Crompton Loom Works, Worcester, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Kitson Machine Co, Lowell, Mass.
McKerrow & Bennett, 31 State St, Boston, Mass.
Payne, G. W. & Co, Pawtucket, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Thun & Janssen, Reading, Pa.
White, John F, 38 River St, Providence, R. I.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Wool, Hair and Noils.

Fowles & Co, 102 Church St, Phila.
Lyon, John H, & Co, 12 Reade St, N. Y.
Muhlhauser, F, Co, Cleveland, Ohio.
Webb, Chas. J, & Co, 156 N. Front St, Phila Pa.

Wool Shoddies.

Bowers', James, Sons, Ltd, Chester, Pa.
Garfield Woolen Co, Garfield, N. J.
Muhlhauser, F, Co, Cleveland, Ohio.
Riverdale Woolen Co, Riverdale, Northbridge, Mass.

Wool Sorters and Scourers.

Duross, Theodore A, Kensington Ave. and Huntingdon St, Phila.

Wool Washing, Preparing and Drying Machinery.

Kitson Machine Co, Lowell, Mass.
Sargent's, C. G, Sons, Graniteville, Mass.

Yarns, Threads, Etc.

Banding.

Kenyon, John J, Pawtucket, R. I.
Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass
Whittier Cotton Mills, Lowell, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
White, James F, & Co, N. Y. and Phila, Pa.
Whittier Cotton Mills, Lowell, Mass.

Carpet Yarns.

Fleming & Chapin, 215 Church St, Phila, Pa.

Colored Cotton Yarns.

Eichman & Sternberg, 488 Broadway, N. Y.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hadley Co, Holyoke, Mass.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.
Wilmington Mills Mfg. Co, Wilmington Del.

Cotton Warps and Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Clark, Wm. Co, Westerly, R. I.
Cohannet Mills, Taunton, Mass.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa

Germantown Spinning Co, Germantown Pa.
Globe Yarn Mills, Fall River, Mass.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hadley Co, Holyoke, Mass.
Hawes, O. S, & Bro, Fall River, Mass.
Holland & Webb, 487 Broadway, N. Y.
Kerr Thread Co, Fall River, Mass.
King, Alex, & Co, 54 Leonard St, New York City.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Monument Mills, Housatonic, Mass.
North Athens Cotton Mills, Athens, Tenn.
Orswell Mills, Fitchburg, Mass.
Sampson, O. H, & Co, 67 Chauncy St, Boston, Mass.
Montgomery, J. R, Co, Windsor Locks, Ct.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co., 86-88 Franklin St.

Gassed Yarns.

Greene & Daniels Mf Co, Pawtucket, R. I.
King, Alex, & Co, Leonard St, New York.

Glazed Yarns.

Blodgett & Orswell, Pawtucket, R. I.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Kenyon, John J, Pawtucket, R. I.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
King, Alex, & Co, 54 Leonard St, New York.
Malcolm Mills Co, Frankford, Pa.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.

Hadley Co, 95 Milk St, Boston, Mass.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
King, Alex, & Co, 54 Leonard St, New York.
Moore, C, & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Lowell, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Abegg & Rusch, 92 Grand St, New York.
Boyer, B. F, & Co, 516 Market St, Philadelphia, Pa.
Campbell, Geo, & Co, Phila, Pa.
Clark, Wm. Co, Westerly, R. I.
Clasgens, The J. & H. Co, New Richmond, Ohio.
Cohannet Mills, Taunton, Mass.
Croll, Albert Ivins, Boston, Mass.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Germantown Spinning Co, Germantown, Pa.
Globe Yarn Mills, Fall River, Mass.
Greene & Daniels Mfg. Co. Pawtucket, R. I.
Holland & Webb, 487 Broadway, N. Y.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Kerr Thread Co, Fall River, Mass.
King, Alex, & Co, 54 Leonard St, New York.
Mitchell, James E, & Co, Phila. and Boston.
Monument Mills, Housatonic, Mass.
Orswell Mills, Fitchburg, Mass.
Porter Bros, 78 Worth St, New York.
Rockwell, E. M, Leominster, Mass
Sampson, O. H., & Co., 67 Chauncy St., Boston, Mass.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86-88 Franklin St, N. Y.
Skerry, A T, & Co, 47 Leonard St, N. Y.
Trenton Worsted Mills, Trenton, N. J.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co, N. Y.
Warren, W, Thread Works, Lowell, Mass.
Whittier Cotton Mills, Lowell, Mass.

Jute Yarns.

Eichman & Sternberg, 488 Broadway, N. Y
Wilmington Mills Mfg. Co, Wilmington, Del.

Mohair Yarns.

Abegg & Rusch, 92 Grand St, New York.
Eichman & Sternberg, 488 Broadway, N. Y
Holland & Webb, New York.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Eichman & Sternberg, 488 Broadway, N. Y.
Holland & Webb, New York.
Malcolm Mills Co, 216 Chestnut St, Phila, Pa.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

Ramie.

Holland & Webb, New York.
Sampson, O. H., & Co., 67 Chauncy St., Boston, Mass.

Silk Noils and Yarns.

Skerry, A. T, 47 Leonard St, New York.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eichman & Sternberg, 488 Broadway, N. Y.
Fleming & Chapin, 215 Church St, Phila, Pa.
Hawes, O. S, & Bro, Fall River, Mass.
Holland & Webb, 487 Broadway, N. Y.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Spun Silk Yarns.

Champlain Silk Mills, Whitehall, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, 516 Market St, Philadelphia, Pa.
Clasgens, The J. & H. Co, New Richmond, Ohio.
Hollister Bros, 160 5th Ave, New York.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
King, Alexander & Co, 54 Leonard St, N. Y.
Porter Bros, 78 Worth St, New York.
River Spinning Co, Woonsocket, R. I.
Rockwell, Edward M, Leominster, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Alleghany Worsted Mills, Phila, Pa.
Botany Worsted Mills, Passaic, N. J.
Boyer, B. F, & Co, 516 Market St, Philadelphia, Pa.
Campbell, Geo, & Co, Phila, Pa.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson St, Camden, N. J.
Eichman & Sternberg, 488 Broadway, N. Y.
Herbst & Jones, 21st and Naudain Sts, Philadelphia, Pa.
King, Alexander & Co, 54 Leonard St, N. Y.
Porter Bros, 78 Worth St, New York.
Sawyer, Manning & Co., 86-88 Franklin St, N. Y.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

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SITUATIONS WANTED.

W. H. COTTON.

A practical mill man is in charge of the Information Department and Overseer's Bureau.

The advertisers in the following columns should be addressed in care of TEXTILE WORLD, or inquiries concerning them may be addressed directly to "Information Department, TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions, are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

WOOLEN SUPERINTENDENTS.

1219 **Superintendent.** A young man who has had a practical experience in every department of a woolen mill, including designing, wishes to secure a position as superintendent, designer or both. Is highly recommended by his present employers for whom he holds a position as overseer. His strong points are on cassimeres, cheviots and Unions.

1208 **Designer or Superintendent.** Graduate of textile school. Experienced in most kinds of woolens. During the eight years very successful on fancy worsteds and cassimeres, also overcoatings. 35 years of age and married. The best of references as to ability and character.

1203 **Superintendent, Woolen,** or superintendent and designer. Age 39; married. Has held a position as superintendent 9 years; 2 years in one mill and 7 in another. Has good references. A good man on meltons, overits, cassimeres, worsted and kerseys; also serges.

1186 **Woolen** Assistant Superintendent or designer. Age 26. Graduate of Philadelphia Textile School. Fancy woolens and novelty dress goods. Familiar with English and American machinery. First-class references.

1174 **Woolen Superintendent** wants a position as superintendent, designer or weaver. Age 47; married. Crompton or Knowles looms, cheviots, suitings, tricots and face goods Don't want a position in Canada. Good references.

1170 **Woolen Superintendent** wants a position as superintendent and designer of a small mill, or superintendent of a large mill. Age 54; marrried. Don't want a position in any of the Southern or Western states. Has worked on a great variety of goods, and can refer to reliable parties.

1159 **Woolen Superintendent.** A first class man on carriage robes, furniture plush, bed and horse blankets. Has excellent references. Has held present position as superintendent for several years; good reasons for desiring a change. Age 39; married.

1222 **Superintendent, Designer and** Weaver. Wants a position in woolen or worsted mill. Understands the work thoroughly, on a great variety of goods.

1225 **Woolen** mill man, 40 years of age, wants position as superintendent, carder, spinner, or spinner and carder. A practical man in each department.

1067 **Superintendent.** One who understands worsteds, beavers, kerseys, union cassimeres and fancy cassimeres, and is a good manager. Age 45; married. Has a good record and is well recommended.

866 **Woolen Assistant Superintendent** or overseer wants position. Age 28; married. Is familiar with the manufacturing of beavers, kerseys, cheviots, worsteds and dress goods. Good references.

COTTON SUPERINTENDENTS.

1220 **Cotton Mill Superintendent** or overseer of weaving wants position. Age 37. Has had a good experience and is well recommended. Cotton goods, plain or fancy. Can design.

1114 **Superintendent and Overseer,** wants position on cotton goods, has had a first-class experience, and can furnish first-class references. Will go anywhere; age 39 and married; salary reasonable; is a first class man on seamless bags.

1108 **Cotton Superintendent** or would accept position as overseer of large mule spinning department. Has good references and a first-class record, and is a thorough mechanic; familiar with all kinds of yarns, especial hosiery and prints; age 40 and married.

1133 Is a good man on cotton goods; age 43; married; American, wants position as superintendent. Refers to first-class companies; is well posted on various kinds of machinery.

1184 **Cotton Mill Superintendent,** wants position. Age 50; married. Sheetings, shirtings, drills, etc.; also all kinds of yarns and yarn dyeing. Has good references. Superintendent eighteen years at one mill.

WOOLEN CARDERS.

1147 **Woolen Carder.** Age 45; married. Overseer 18 years in one place. Long experience on all wool, wool and cotton mixed, shoddy, etc., etc. Will go anywhere except Canada.

1082 **Woolen carder experienced on** all classes of underwear. Has worked for eight years in one mill, 29 years of age and married. Good references.

1197 **Woolen Carder** wants position. Overseer over 16 years in some of the best woolen mills. Accustomed to all kinds of work. Age 50; married. Well recommended.

1190 **Woolen** Carder or Spinner. Age 47; married. One reeler and one piecer in family. Has been overseer and spinner for the last fifteen years for one firm, which is now out of business. Refers to past employers. Can take position at once. Familiar with wool shoddy and cotton; Furbush, Lee and other makes of machinery.

1153 **Comber.** Understands repairing and running combers, speeders and cards. Overseer seven years in one of England's fine mills, on counts ranging from 120s to 150s. Will accept a position as overseer or 2d hand. Refers to responsible parties as to ability and character.

1213 **Woolen Carder** wants position. Age 45 and married. Is familiar with a great variety of work.

COTTON CARDERS.

910 **Is a good carder** on plain, colored and fancy white stock. Age 41. $2.50 and up.

1135 **Second Hand of Cotton Carding** and combing. Wants position. Has first-class references. Age 28.

1009 **Overseer of Cotton Carding** is open for a position. Age 40; married.

910 **Overseer** of cotton carding. Good man on white or colored yarns, for plain or fancy work. Age 42; married.

241 **Carder**, cotton. Has had a thorough experience as overseer in some first-class mills, to which he refers. Sheeting yarns a specialty

502 **A First** class cotton carder and spinner is open for an engagement. References are of the best.

WOOLEN SPINNERS.

1223 **Wants position as Overseer of** Spinning or Twisting, or both. Familiar with fine or coarse numbers. Refers to past and present employers.

1112 **Overseer of Woolen Spinning** wants position. Has first-class references. Age 37. Wages reasonable. Will accept second hand's position.

967 **Woolen Spinner.** Age 28; single. Wants position where there is an opportunity to rise in the business.

1195 **Spinner, Woolen.** American; age 31; married. Experienced on yarns from 1 to 7 1-2 run. Refers to past and present employers. Wants position as overseer. Will not go to Southern States, Canada or Connecticut. Is an experienced overseer.

1111 **Overseer of Spinning** wants position. Age 48 and married. Has good recommendations from last employers. Has worked on cassimeres, wool shoddy, fancy elderwown and flannels. Will go anywhere.

1152 **Woolen Spinner** wants position as overseer or 2d hand, in Southern or Western States, or Pennsylvania. Age 20; single. Understands Johnson & Bassett operators and mules. Has worked on a variety of goods. Good recommendations as to character and ability.

COTTON SPINNERS.

1171 **Overseer of Cotton Ring Spinning.** Age 25; good references. Has made yarns from number 8s to 100s. A good manager of help.

1196 **Mule or Ring** cotton spinner wants position as overseer. Age 36; married; 12 years in one mill; 6 years as mule spinner, 2 years as second hand and 4 years as overseer. Has had a very thorough experience on tickings, shirtings and denims. Used to both English and American make of machines. References are good; can accept position at once.

1189 **Spinner, Cotton, Mule or Ring.** Age 38; married. Ginghams, dress goods, flannels and hosiery yarns. English or American make of machinery. References if desired. Don't want a position in Maine, Canada or any Western state.

1198 **Cotton Spinner,** spooling, warping, slashing, web drawing, skein winding and quilting on linen. Well recommended. Age 42; married. Has worked in some of the best mills. Will go anywhere. Would accept a good second hand's position.

1187 **Overseer of Dressing** or spinning wants a position in a cotton mill. Is an A1 man on colored or white goods, and understands slashing and beaming thoroughly. American; age 38; married. Has had charge in some of the best mills of New England. Sheetings, shirtings, dress goods, cheviots, flannels and sateens. Familiar with Mason, Whitin and Lowell machinery.

1176 **Ring Spinner, Overseer** wants position on medium, fine or coarse spun yarns; age 38; married. Can take position at once. Can furnish satisfactory references from past and present employers. Good reasons for wishing to make a change.

1158 **Overseer of Ring Spinning,** spooling, warping and slashing wants position on white work, fine or coarse. Age 46; single. Will go anywhere. Good references. Familiar with Mason, Bedford, Lowell and Fales & Jencks machinery.

1204 **Situation wanted** as boss spinner, or second hand and mule fixer on Platt mules. Many years experience on yarns for dress goods in England, and also yarns for fine woolen cloth. 35 years old and married; good references.

WOOLEN WEAVERS.

1216 **Weaving and Dressing.** Man wants position as overseer of weaving or dressing, or both, in some good woolen mill. Has had 16 years' experience. Can pick patterns and figure yarns. Has references.

1172 **Wants an Overseer's Position.** Has had charge of weaving and dressing, and is a designer. Crompton, Knowles or Gilbert looms. Two workers in family. Has first class references.

1130 **Overseer of Woolen Weaving** wants position. Would accept 2nd hand's position in a good mill. American; protestant; age 36; single. Good man on Knowles fancy and plain looms, also Davis & Furber. Cassimeres, worsteds, meltons and flannels Will not go South, West or Pennsylvania.

1008 **Wants boss job in flannel mill.** Northern New England preferred, also a good man for dresser or fixer, has worked on flannels, serges, cheviots, fancy dress goods. Is 34, married.

1115 **Overseer of Weaving** wants position in woolen mill; age 50 and married; mill stopped, cause of being out of a position; is a reliable man, first class references; has worked on dress goods, carriage cloths, blankets, etc.

COTTON WEAVERS.

176 **Wanted.** A position as overseer of weaving, second hand or loom fixer, either in a cotton, woolen or jute bagging mill, by a faithful, sober, steady man, fully capable in either of the above positions. References furnished as to character and experience.

1113 **Overseer of Weaving** woolen or cotton goods; age 30 and married. Will work for moderate pay until ability is proven. Will go anywhere. Has a thorough knowledge of box looms and plain. Can furnish good references if required.

1110 **Overseer of Cotton Weaving,** fancy or plain. Age 42; German. Wants position as overseer, or will take second hand's position. Has had charge where first-class goods are made. Good references.

1073 **Overseer of Weaving,** cotton. Is a good man on fancy work, fine goods, lenos, etc. Has good reference. Age 35; married. Is familiar with the work in some of the best mills in New England.

1127 **Overseer of Weaving.** French. Age 36; married. Understands sheetings, drills and prints. Will go anywhere. Out of work; mill stopped. Refers to past employers.

FINISHERS.

1161 **Woolen Finisher** wants position. American; age 37. Don't want to go to Southern or Western States. Has had a thorough experience on cheviots, cassimeres, broadcloths, mohairs, beavers, cloakings, overcoatings, etc. Good references if required.

228 **Is an A1 Woolen Finisher.** Age 36; married. Has been employed in two of the very best mills in New England, and refers to them as to character and ability.

1041 **Woolen Finisher.** Has had experience on fancy and piece dyed goods, cassmeretes, cheviots, worsteds, kerseys and dress goods. Wants position as overseer or second hand in New England States. Age 26 years. Will work for $2 50 per day.

1207 **Woolen or worsted** finisher wants position as 2nd hand in some first-class mill. Has had a good experience as 2nd hand, and refers to past and present employers; age 28. Especially strong on Scotch tweeds, dress goods and fancy cassimeres. Familiar with English and American machinery.

1214 **Woolen and Worsted Finisher.** A first class man. One that has had a thorough experience in one of the best mills in New England.

DYERS.

1217 **Woolen Dyer,** wants position as boss dyer on beavers, kerseys, dress goods, cloakings, piece dyes, worsted yarns, both with machine and hand dyeing. Also wool in fancy colors.

1145 **Overseer of Dyeing** cotton. Accustomed to cotton thread, cotton, yarn and chaine warp. Has held the position of overseer in first-class mills and has a general knowledge of cotton dyeing. Age 50, married. Now open for an engagement; have references.

754 **Dyer.** Woolen and cotton. A long experience in the leading cotton and woolen mills. First class references. An all-right man.

1165 **Dyer,** wants position on cotton goods, ginghams, stripes, and cotton goods in general, long and short chain. Understands sizing. Southern states or Canada preferred. Now in the South. Age 37; married.

1166 **Dyer** on wool or cotton piece skein and raw stock, cotton and silk noils, and mixed, fibres and knit yarns. Age 40; married. Has had a good experience, and refers to good parties.

1146 **Bleacher and Dyer** wants position. Age 35 and married. Is highly recommended by reliable manufacturers; experienced on all classes of underwear; also skein yarns.

1218 **Dyer of Fast Colors.** On wool and worsted in the stock, slub, yarn and piece, and who is a graduate chemist of the Massachusetts Institute of Technology. Wants a situation.

1201 **Wants** position in laboratory manufacturing, house or mills, or would accept a position as second hand of dyeing. Age 28; single. Has been employed by two of the best houses in the country. Can take position at once. Western and Southern States barred out.

1175 **Finisher or Dyer,** woolen goods, wants position in Western or Southern States; cassimeres, blankets, dress goods, etc. Refers to mills in which he has held position as overseer; age 43; married. References are good.

1149 **Woolen Dyer.** American; age 44; married. Familiar with wool and worsted yarns, piece dyeing, cotton, cotton yarns, shoddy and extracts. Good references.

1188 **Dyer** on cotton yarn or thread. Age 28; married. Will not go South or to Canada. References if required. Six years' experience as second hand in a first class thread mill.

1194 **Dyer, Woolen;** age 32; married. Has held position as assistant dyer and overseer of dyeing. Refers to present employer; good reason for changing. Could take position on one week's notice; worsted yarns, wool in stock and piece dyes.

KNITTERS.

1163 **Knit.** Good man for hosiery mill; understands buying, selling and finishing. Has had first class experience, and can furnish first-class references. Would accept position as travelling salesman.

1164 **Wants Position** as superintendent of hosiery mill, or overseer of woolen carding and spinning. 35 years of age; 9 workers in family. Has good references, and has had a good experience. For further information address No. 1164, care Guild & Lord.

1131 **Manager of Knitting Mill,** or will accept position as finisher and shipping clerk; age 38. Has worked on cotton and wool, flat and fleece, also rib goods. Familiar with many kinds of machinery. References from first class men.

677 **Knitter** wants position. Is a man fully capable of handling a knitting plant, hosiery or underwear. Age 32; married. Best of references as to character and ability. Can take position at once.

887 **Superintendent.** Is a practical mill man with 20 year's experience in carding, spooling and knitting. Age 35. Now employed in one of the best mills in New England.

1173 **Wants Position** as overseer of knitting department. Understands all kinds of machines; plush work, vertical stripes, full fashioned flat cuff, rib knitting, etc. Refers to good people who have known him for 28 years, and others; age 38, married.

1185 **Knit Superintendent or Overseer.** Have successfully started several plants. Understands all kinds of cotton or worsted underwear, and all kinds of machinery, spring or latch. Age 45; married.

1180 Wants position as 2nd hand of carding in woolen or knit mill. Age 23; single. Has been successful in like position. Prefers position in Mass., R. I., Conn., N. H., Penn., N. Y. or N. J. References if required.

1148 **Knitter or Machinist.** Age 28; married. Understands Lamb machines, full fashioned underwear, and ladies' and children's underwear. Good references. Owing to the mill shutting down is now out of work.

1224 **Knit.** Superintendent. Understands all makes of machines; silk, wool, merino, worsted, lisle and cotton goods. References all right. Age 35 years.

MISCELLANEOUS.

1211 **Designer.** Open for an engagement. A first class man on worsteds and woolens, and cotton and worsted mixes, cassimeres and cheviots, cheap and fine goods.

1209 **Book-keeper** is open for an engagement. Will accept a position in any State. Could take a position at once. Has first-class references.

1156 **2nd Hand of Dyeing** or overseer of washing and bleaching wants position. Familiar with knit goods, wool. Age 33. Don't want a position in Canada or the Western or Southern states. Can take position at once; good references.

1162 **Good Man for Beaming Department.** On heavy sized, plain calicoes and colored cotton goods, twills and sheetings. Will go anywhere. Age 33; married. Good references.

549 **Hosiery Superintendent.** Now employed in a first-class mill; wishes to change. Don't want a position in the Southern States or Canada. Has started five new knitting mills during the past ten years. Is an American, 31 years of age and married. Familiar with all kinds of machinery and has first-class references.

1192 **Worsted Steam Dresser** wants position as overseer. Has worked in some of the best mills in England and America. Has high references; age 36; married. Has a thorough knowledge of both plain and fancy work.

1087 **Overseer of Beaming, Designing or Weaving.** 35 years of age. Married. Has worked on dress goods, silk striped shirtings, pantaloon goods, ginghams, etc. Highly recommended. Will go anywhere in the United States.

1151 **Asst. Superintendent or Designer** wants position. Age 33; married. Worked on cloakings, fancy worsteds, cheviots, dress goods and cassimeres. Can refer to past employers.

1137 **A Salesman for an Underwear** Mill. Would prefer the account of some large underwear mill exclusively. Salary or commission. Is an experienced salesman and with 9 years practice in the manufacture of knit underwear.

1205 **Designer, Woolen,** wants position. Age 30 and married. Refers to some of the best men and mills. Prefers a position in Mass., R. I., Conn., Penn. or N. Y. Experienced on plain and fancy woolens and worsteds, cheviots, cassimeres and fancy tweeds.

1206 **A Young Man,** 27 years of age, who has had ten years' experience in a bleaching department, desires a position. Can bleach for dyed or white work from the caustic soda or lime formulæ. Can furnish reference as to workmanship, character and sobriety.

1157 Wants position. Has a general knowledge of all departments in a cotton mill, and can fill most any position. Has highest of references; age 26, married.

1141 **Overseer of Wool Sorting** wants position. Understands sorting and grading in all its branches; 20 years experience as boss sorter. Can give the best of references from past and present employers. Is a good judge of the shrinkage of wool, and understands the selection of wool in market for mill. Has six workers in family.

1124 **Bleacher** wants position. Age 50; married. Has been employed in a first class bleachery for several years, and can furnish good references. Will go anywhere. Wages moderate.

1202 **Silk Superintendent** is open for an engagement with a first-class company. Has a thorough knowledge of all the details connected with the manufacturing of silk ribbons and hat bands, from throwing to the finished product. Has held the position of superintendent of a first-class mill for several years. Under 30 years of age, and married. Has the best of references. For any further information address this paper.

1134 Position wanted as designer or assistant superintendent by young man, graduate of the Philadelphia Textile School; now employed. High references.

1142 Position wanted as assistant superintendent or designer in woolen mill (N. E. states preferably), by young man 26 years of age, of several years mill experience and a graduate of the Philadelphia Textile School. The salary expected would be small to begin with, as a start is the chief object at present.

1193 **Designer,** with a long experience on worsteds, silk, etc. A competent reliable man. Refers to past employers.

1119 **Salesman,** wants position selling dyestuffs. Is a thoroughly posted man in this line; can refer to past employers. Will go anywhere. Age 41 and married.

533 **Situation wanted** as superintendent in flax, hemp or jute mill. Can make all kinds of yarn, threads, sail twines. Best of references as to character and ability. Twenty years experience in the same line, both wet and dry spinning.

1144 **Salesman** wants position as traveling salesman for dyestuffs, mill supplies, oils, etc., in which line he has had a good experience. Has first-class letters of recommendation from past employers, and others; age 45; widower.

Continued from page 112.

Mr. Joseph Wildman manufacturer of dye house clogs, Philadelphia, was greatly bereaved on the 2nd inst. by the death of his eldest son, Alfred. Being a delicate boy, he was an object of the special care and affection of his parents, who have the sympathy of a wide circle of friends. The funeral was largely attended, and the remains were escorted to the grave by his young comrads, "The Boys' Brigade," of the Franklin Ave. Baptist Church.

Jeremiah Hanrahan, 70, father of Michael Hanrahan, overseer at the Laurel Lake Mill, Fall River, Mass.

Matthew Watson, 45, treasurer of the Windham Cotton Mfg. Co., Willimantic, Conn

Wm. Smith, 67, for a number of years superintendent of the Mayfield (Ky.) Woolen Mill.

Ralph Cheney, 91, at his home in South Manchester, Conn. Deceased was one of the founders of the firm of Cheney Brothers, silk manufacturers, at South Manchester, Conn.

Geo. Harrell, a woolen overseer of Manton, R. I., of Pneumonia.

Nathan Watson, at Providence, R. I.; deceased was a large stock holder in the Windham Cotton Manufacturing Company at Willimantic, Conn.

Wright Bottomley, a mill owner at Cherry Valley, Mass.

G. W. Purnell, 70, at Rockville, Conn.; deceased was for many years an overseer in the Florence Mills of that place.

Walcott & Campbell Spinning Co.,
IROQUOIS MILLS.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., N. Y.

For Sale!
5 CROMPTON LOOMS
in perfect order, good as new looms, were run untill three weeks ago. 92 in 4x4 Box, 25 Harness, Box and Stop Motion. Two of them have Knowles Box Motion.
These looms were taken in settlement of an account and will be sold **very cheap.**
Address, **Box 457, Lowell, Mass.**

Cloaking Manufacturers.
Active New York Commission House wants to represent good manufacturer of CLOAKINGS, with large production. Goods billed direct from mill. Address,
F. H., Textile World, Boston.

$250,000 for Manufacturers.
The Board of Trade of Titusville, Pa., have the above amount to aid in establishing factories in their city. Correspondence solicited. Address,
Sam'l G. Maxwell, Pres.
A. P. Cooley, Sec'y.

Loom Fixer Wanted. A good, steady, reliable loom fixer, who thoroughly understands the head motion of Knowles' looms. State experience. The Salt's Textile Mfg. Co., Bridgeport, Ct.

1226 **Overseer of Cotton Weaving.** Age 30; married. Accustomed to sheetings, shirtings, twills, drills, fancies and quilts. Can take place at once. Refers to present and past employers.

Linen. In view of the proposed change in the tariff on linen goods, the advertiser would like to enter into communication with a firm or corporation thinking of going into the linen business.
He is a man of high standing and business qualifications, thoroughly understanding every class of linens from the fibre to the finished article, and possesses a valuable selling connection with the best buyers throughout the country. He is competent to superintend the adaptation of existing machinery to the linen trade wherever practicable, to purchase and install new plants and would be prepared to give figures showing likely returns from the business.
All communications will be regarded as strictly confidential. Address N. 45, Lord & Thomas, Chicago, Ills.

WANTED.—A first class cutter on rib or flat goods, with six years' experience desires a position in a Philadelphia mill. Address, CHARLES CARSON,
108 Remsen Street, Cohoes, N. Y.

Designer of Cotton and Mixed Dress Goods
Jacquard and dobby (age 26) wants situation. At present head designer for a firm in Lancashire, Eng. Good sketch maker and originator, and thoroughly understands working of design to loom, as also all the latest card cutting and repeating machinery. Not afraid of work. Willing to work for a firm just commencing in fancies at a progressive salary. Has obtained highest certificates in honours for weaving and designing, and cloth workers medal for same. Address, "153. Textile World, Boston, Mass.

TO DAMASK MANUFACTURERS:
WILLIAM KEILLER, the cleverest Damask Designer in the Irish Textile Industry, desires to hear from manufacturers who are open to engage a Designer, or would be willing to give outside work. Address,
22 Waring Street, Belfast, Ireland.

Cotton Mill for Sale.
A fine 6000 spindle Cotton Mill, equipped with all machinery for making yarns 8's to 20's, 2, 3 and 4 ply, tube yarns, ball twines, etc.
The mill is now in successful operation under a 2 year's lease, but said lease, subject to sale at 90 days' notice.
The property embraces a very valuable water power, and is now developed by two modern double Turbine wheels, furnishing 250 horse power, with capacity of steam of **double** the present development.
These mills are located in a section of country that possesses many advantages in manufacturing. Will be sold on easy terms. For full information call on or address, THE BANK OF MARYVILLE, Maryville, Tenn.

Knitting Mill Wanted !

The town of Lyndonville, Vermont, has peculiar advantages for a Knitting Mill, viz:

SPLENDID POWER,—Water (850 H.P.), Electric.

BEST HELP (native) at reasonable wages.

GOOD FREIGHT and shipping facilities on B. & M. R. R.

The townspeople are progressive and willing to encourage legitimate enterprises. The town has electric lights and water. It is a fine location for a wood-working establishment. Plenty of hard wood cheap.

Write to the BOARD OF TRADE,
Lyndonville, Vt.

LYNDONVILLE,
VERMONT.

FREE SITES
FOR
COTTON MILLS

Along the line of the Illinois Central Railroad Co. in West Tennessee, Mississippi and Louisiana are offered with cheap fuel, low-priced American labor, best of freight facilities, and, in many locations, exemption from taxation for ten years, with liberal subscriptions to stock, if desired.

Write for pamphlet "One Hundred Cities and Towns Wanting Industries," which gives in a nutshell statistics of desirable places. The undersigned solicits and will treat in confidence all correspondence with those prospecting for new locations.

GEORGE C. POWER,

Industrial Commissioner, I. C. R. R. Co.,

506 Central Station, CHICAGO, ILL.

FOR SALE, SECOND-HAND MACHINERY.

Double Corliss Engine, cylinder 23x60 in. Single Corliss Engine, cylinder 20x48 in. Singles Corliss Engine, cylinder 16x36 in. Single Corliss Engine, cylinder 12x24 in. 30-40 50-80 and 100 H. P. Automatic Engines.

Large stock of Plain Slide Valve Engines, Boilers, Steam Pumps, Feed Water Heaters, Lathes, Planers, Shapers, Drill Presses, Milling Machines, Electric Motors and Dynamos, and Wood-working Machines. Let me know your wants as my stock is constantly changing. Yours respectfully, FRANK TOOMEY, 131 No. 3rd St., Philadelphia.

FACTORY SITES
FOR SALE
in the fast growing village of
DOLGEVILLE, - N. Y.

Water unexcelled for Wool Washing.
Power furnished at very low price.
Good Locations along Railroad.
Best Shipping Facilities.

FOR PARTICULARS ADDRESS
ALFRED DOLGE, Dolgeville, N. Y

Success of the Rockwell Appliances For Burning Fuel Oil

W. S. Rockwell & Co., of 26 Cortlandt St., New York, have recently equipped the singeing plant of the Liondale Bleach, Dye & Print Works, Rockaway, N. J., with their Improved Duplex System for burning fuel oil. They are now putting in a similar plant for the Bronx Co., New York. Their appliances are rapidly gaining the attention of the textile trade, and they report business good.

—Bonus. The Fort Covington Board of Trade has a large bonus to offer to any company or person who will locate in the village of Fort Covington and operate some kind of a factory. The said village is well located, with good shipping facilities by rail or boat. Correspondence solicited. Address W. G. Cushman, Sec., Treas., Fort Covington, Franklin Co., New York.

Experienced Salesman, resident of Chicago; thoroughly posted on domestic cottons, linings, and shirtings and woolens for gents' wear, would like to represent manufacturer in the Chicago market and the West. Nine years' acquaintance with the wholesale trade. Best references. Present engagement terminates June 1st. Address Emory, 1411 Newport Ave, Chicago.

Assignee's Sale.

PEARCE, ATKINS & CO.,
CINCINNATI, O.

Manufacturers of cotton belting, back-bands, girth webs, surcingles, halters, sash-cord, bell cord, bicycle cord, clothes lines, plow-lines, etc.

ESTABLISHED IN 1876.

By order of the Court of Insolvency of Hamilton County, Ohio, the undersigned invites bids for the entire property and business of said firm, as a whole (less cash and merchandise on hand, accounts and bills receivable), or separate bids for any lot of their property as described hereinafter, viz:

1. FACTORY.

Four-story brick building substantially built in 1880 expressly for this business, but suitable for any manufacturing, covering lot 70 by 90 at northeast corner of Plum and Charles streets, Cincinnati, O., and two-story brick building, built in 1890, covering adjoining lot 29 by 90; said lots being leased perpetually at the low rental of $594 per annum, taxes and assessments, with privilege of purchase at $11,880.00. Leasehold and factory, including boiler and engine, heating apparatus and elevator, appraised at.....$31,720.

2. OTHER REAL ESTATE.

One lot 50 by 90, at the southeast corner of Twelfth and Plum streets, lying immediately north of the factory, with ten-foot alley between, appraised at....$15,000.

Leasehold of lot 25 by 90, on south side of Twelfth street, adjoining the above on the east, leased perpetually at an annual rental of $250, with privilege of purchase at $5,000. Leasehold appraised at.....$1,875

3. WEAVING MACHINERY.

71 Knowles, Lyall, Gilbert and Mason, belting, back-band and web looms (254 shuttles), with beams, spoolers, bobbins, shafting, hangers, couplings and belting, all complete and in first-class order, and machinery for preparing "Triumph Belting," appraised at.....$35,318.

4. BRAIDING MACHINERY.

106 Braiders for sash-cord, bell-cord, bicycle cord, clothes-lines, plow-lines, torch-wick, etc., all complete and in first-class order, with beams, shuttles, bobbins, singeing and winding machines, spoolers, twisters, shafting, pulleys, belting, lathes and tools, appraised at.....$32,797.

5 MISCELLANEOUS MACHINERY.

Warpers, spoolers, speeders, twisters, sewing machines, creasing, splitting clamping, cutting and winding machines, presses, patterns, platform scales, bobbins, safe, etc., appraised at.....$10,986

6. SPINNING AND CARDING MACHINERY.

7 "Whitin" and other spinning frames (924 spindles), 18 carding machines, card grinder, speeder, balling machine, etc., appraised at $4,191

The purchaser of the whole will be entitled to the good will of the business and all finished contracts at the date of transfer, and can purchase the merchandise left in the hands of the assignee at a reasonable valuation.

The undersigned also invite bids for the following described property belonging to

HENRY PEARCE'S SONS, viz.:

1. REAL ESTATE.

Lot No. 23 as numbered and described on the plat of the Idlewild Syndicate Subdivision, recorded in Plat Book 7, page 8, 50 by 140 on southeast side of Brooks avenue, lying 250 feet north of Kerper avenue, appraised at $1,000

Frame stable on leased lot on Butler street, appraised at.....$200.

2. MACHINERY.

Three spinning frames, speeders, formers, spoolers, twisters, braiders, etc., appraised at $2,787

3. OFFICE FURNITURE.

Safes, desks, tables, chairs, wardrobe, scales, stoves, etc., appraised at.....$416.

4. HORSES, DRAYS, ETC.

Appraised at $349.50

DEER CREEK MANUFACTURING COMPANY STOCK.

The undersigned also invites bids for 573 shares out of 2000 shares of the capital stock (par value $100 per share) of the Deer Creek Manufacturing Company, which owns the five-story brick mill covering lot 70 by 218, at the corner of Fifth and Eggleston avenue, Cincinnati, Ohio, and the boilers, engine, lapping, carding, spinning, warping, dyeing, braiding, spooling, twisting and other machinery for making cotton warps, yarns, rope, twines, shade cord, trotlines, wicking, etc. Bids may be made for any number of shares not exceeding 573. This stock has been appraised at 90 cents on the dollar, or a total of.....$51,570.

Bids must be sealed and enclosed in a separate envelope addressed to the undersigned, and must be in his hands before noon on Wednesday, April 21, 1897. Bids for less than $10,000 must be accompanied by certified checks for 10 per cent of the amount bid. Bids for $10,000 or more must be accompanied by certified check for $1,000, The Court reserves the right to reject any or all bids. If any bid is rejected the accompanying check will be returned. For terms of payment, further information and permits to see mills or machinery, etc., address or apply to

WILLIAM C. COCHRAN, Assignee,

Nos. 313 and 314 Johnston Building, **Cincinnati, Ohio.**

Capital,
$1,200,000.

100,000 SPINDLES.
Weekly Product 120,000 lbs.
14's to 160's.

HIGH GRADE

Cotton Yarns,

SPECIALLY ADAPTED FOR

Silk, Plush, Upholstery & Hosiery

MANUFACTURERS.

American Peelers. Sea Island. Egyptian Cottons.

Superior Qualities Combed and Carded—Furnished in singles, 2, 3, 4 and 6-ply chain warps, skeins, beams, spools, tubes, cones and Lisle Thread yarns.

Cops for Weaving and Twisting. Cops for Hosiery.

GLOBE YARN MILLS,

Fall River, Mass.

E. B. JENNINGS, - - Treasurer.

Arnold B. Sanford, *Pres.* Arthur H. Mason, *Treas*
Capital Stock, $500,000.

Sanford Spinning Co

FALL RIVER, MASS.

30,000 Spindles. Weekly product, 50,000 pounds 14s to 40s.

NOVELTY COTTON YARNS,

FROM AMERICAN PEELERS AND EGYPTIAN COTTONS.

OUR SPECIALTY: Superior qualities of Hosiery Yarns, Natural Shades of Cottons, and in Colors, Jaegers, Mixes, and Bleached, Hosiery Cops on Long Tubes, Skeins, Tubes, Cones and Lisle Thread Yarns. Furnished in Carded and Combed Qualities in Singles, 2, 3 and 4-plies.

YARN DEPARTMENT.

Eastern Yarn Market.

Worsted Yarn. The market for the last month has been noted by increasing firmness, the prices in most instances being advanced three cents per pound, and stand firmly at this advance. In consequence of this position in the market price, we have been obliged to advance our figures accordingly. The chief demand has been for low grade yarns made from 1/4 to 3/8 blooded wool. These yarns are in demand for cheviots, and the disposition of spinners is to hold for higher prices. This attitude has, in a measure, checked business, and weavers are not such free buyers; still, it is thought that the condition of the market warrants the extreme advance that has been made. Fine yarns have not felt the improved conditions in the market to the same extent as coarse yarns. There is a particularly large demand for 2/10s at 46 to 50 cents, and above; 2/26s are also in particular demand. The outlook for spinners is bright, on account of the excellent position that the woolen goods market seems to be in at present. Mills that have been idle are now starting up with most encouraging orders far in advance. This is particularly noticeable in the mills about Providence and middle Connecticut, many of which have been running on part time only for the last twelve months. As stated above, yarns mostly in demand are the coarse yarns, which are wanted for 60-cent grade of goods. There is no prospect of a decline in prices for the next six or eight months, at least.

We quote: 2/12s, 42 1-2 cents; 2/20s, 47 1-2 cents; 2/30s and 2/32s, 52 1-2 to 55 cents; 2/32s 1-4 blood, 54 to 56 cents; 2/28s and 2/30s 3-8 blood, 58 to 60 cents; 2/40s 3-8 blood, 62 1-2 to 65 cents; 2/40s 1-2 blood, 64 to 66 cents; 2/40s delaine, 68 to 70 cents; 2/40s Australian, 72 1-2 cents; 2/50s Australian, 75 to 77 1-2 cents; 2/60s Australian, 85 to 90 cents.

Woolen Yarn. About the same conditions affecting worsted yarns operate concerning woolen yarns. There is a tendency toward the speculative in the purchasing of the low qualities, and, in consequence, prices have been advanced and are firmer than a month ago. Knitters are taking hold of these yarns in anticipation of higher prices, predi cating their opinion upon the probable advance in the raw material.

We quote: Woolen yarns for hosiery, 18-cut, 38 to 44 cents; 22 to 27-cut, 49 to 50 cents; 34 cut filling yarn, all wool, 54 to 55 cents; 12-cut, 33 to 34 cents.

Merino yarns 28s to 30s, 69 to 70 cents; 22s, 39 to 50 cents.

Cotton Yarn. There has been an improved demand during the last month, for cotton yarn, both for knitting and weaving purposes. There is a much better feeling in the trade than existed at the beginning of the year, and, on the whole, there is little cause for complaint. We make, however, no changes in our quotations. The coarser yarns are mostly in demand. The stocks of light weight cotton hosiery and underwear are by no means excessive. The demand for heavier weights for fall and winter wear, especially fast blacks, is good.

Continued from page 131.

O. H. Sampson & Co.,

67 Chauncy Street,

58 and 60 Worth Street, NEW YORK. **BOSTON.** 206 Chestnut Street, PHILADELPHIA

COTTON YARNS

All Numbers, Single or Twisted.

Skeins, Chains, Beams, Balls, Spools, Cones, Tubes, Carded or Combed in

American Peelers, Sea Island AND Egyptian Cotton.

SELLING AGENTS FOR

BENNETT MANUF'G CORP'N.,
COLUMBIA SPINNING CO.,
BATESVILLE MILL,
CHARLESTON COTTON MILLS,
AMERICAN SPINNING CO.,
PELHAM MILLS, IDA YARN MILLS,
McADEN MILLS, MOHAWK MILLS,
HUDSON MILLS, STANDARD YARN CO.

Continued from page 129.

We quote as follows:

HOSIERY YARNS.

Southern.—Frame Spun on Cones.

6s to 8s	12 cts.
13s	12½ cts.
15s	13 cts.
18s	14½ cts.
20s	15 cts.
24s	16 cts.

MULE SPUN ON COPS.

American Carded.

No. 8	14 cts.
" 10	14½ cts.
" 14	15½ cts.
" 18	16½ cts.
" 24	18½ cts.
" 30	20½ cts.
" 40	23¼ cts.

American Combed

No. 8	19 cts.
" 10	19½ cts.
" 14	21 cts.
" 18	22 cts.
" 24	24 cts.
" 30	26 cts.
" 40	30½ cts.

Egyptian Carded.

No 11	19 cts.
" 16	20 cts.
" 22	21½ cts.
" 26	22½ cts.
" 30	24½ cts.
" 36	26½ cts.
" 40	27½ cts.

Egyptian Combed.

No. 11	25 cts.
" 16	27 cts.
" 22	28½ cts.
" 26	27½ cts.
" 30	29½ cts.
" 36	31½ cts.
" 40	32½ cts.

TWISTED TWO AND THREE PLY.

Two-ply.

2 cts. higher to	20s
2¼ cts. "	20s to 36s
3 cts. "	36s to 50s
4 cts. "	50s to 70s
5 cts. "	above 70s

Three-ply.

½ ct. higher to	20s
1 ct. "	20s to 36s
1½ cts. "	36s to 50s
2 cts. "	50s to 70s
5 cts. "	above 70s

CONES.

½ ct. higher to	12s
1 ct. "	12s to 36s
1½ cts. "	36s to 50s
2 cts. "	50s to 70s
3 cts. "	70s & above

EGYPTIAN FRAME YARNS.

Carded.—Single.

No. 20	22 cts.
" 26	23½ cts.
" 30	25½ cts.
" 36	26½ cts.
" 40	28 cts.

Carded.—Twisted.

No. 20	23 cts.
" 26	24½ cts.
" 30	26½ cts.
" 36	28 cts.
" 40	29½ cts.

Combed.—Single.

No. 20	27 cts.
" 26	28½ cts.
" 30	30 cts.
" 36	32½ cts.
" 40	33½ cts.

Continued on page 133.

SAWYER, MANNING & CO.,
YARNS,
86 & 88 Franklin St., NEW YORK

ALEX'R KING & CO.
YARNS.
FINE IMPORTED YARNS A SPECIALTY
54 Leonard St., New York.

JAMES E. MITCHELL & CO.,
Commission Merchants.
122 & 124 Chestnut St., Philadelpia, Pa.
51 & 53 Summer St., Boston.
Cotton, Woolen & Worsted Yarns.
All numbers on Hand and Made to Order.

O. S. HAWES & BRO.,
WEAVING and HOSIERY YARNS,
All Plies and Numbers.
Imported Yarns a Specialty.
82 and 84 BEDFORD ST., FALL RIVER, MASS.

YARNS All Numbers and Qualities.
HOLLAND & WEBB,
478 Broadway, New York.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON WARPS
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON
YARNS 40s and above.
FITCHBURG, MASS. AND WARPS

E. Jenckes Manufacturing Co.
COLORED COTTON YARNS,
Cops and Cones.
PAWTUCKET, R. I.

Frank E. Patterson, Prest. Oscar W. Wood, Treas

Germantown Spinning Co.

COTTON CARDED

HOSIERY YARNS

In numbers from 6s to 26s.

Germantown, Philadelphia.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. E. J. CARRIGAN, Sec.

Established 1860.—Incorporated 1893.

THE S. BLAISDELL JR., CO.,

Egyptian COTTON Peruvian

American Long Staple a Specialty. and all American Southern points.

Shipments direct to mill form Egypt, Peru

CHICOPEE, MASS.

Established 1865.

H. M. WITTER & COMPANY,

Manufacturers of

COTTON WEBBING, TAPES AND BINDINGS,

Worcester, Mass.

WEAVING and HOSIERY YARNS.

We Buy for Cash

WARPS, COPS, TWIST and SOFT SKEINS, Single, Double, 3-ply, 4-ply, etc.

COLORED YARNS for HOSIERY

on Cones, a Specialty.

Correspondence Solicited.

EDWARD S. HYDE, 223 and 225 Chestnut Street, PHILADELPHIA PA.

Glazed, Bleached and Dyed

YARNS

Cone Winding.

W. WARREN THREAD WORKS.

WRITE US WHAT YOU USE, WE WILL DO THE REST.

WESTFIELD, - MASS.

Continued from page 131.

Combed.—Twisted.

No. 20	28 cts.
" 26	29½ cts.
" 30	31 cts.
" 36	34 cts.
" 40	35 cts.

Cones.

1 ct. higher	20s to 36s
1½ cts. "	36s to 50s
2 cts. "	50s to 70s
3 cts. "	70s & above

Warps.

½ ct. higher	20s to 36s
1 ct. "	36s to 50s
2 cts. "	50s to 70s
3 cts. "	70s & above

SINGLE YARNS.

Northern.

20s	16 cts.
30s	19 cts.
40s	24 cts.

Southern.

10s	12½ cts.
18-20s	14 cts.
26s	15 cts.

CHAIN WARP.

10s	12 cts.
12s	12½ cts.
18s	14 cts.
20s	14½ cts.

TWO, THREE AND FOUR PLIES.

Northern.—Skein.

20s	17½ cts.
26s	19 cts.
30s	20 cts.
36s	24 cts.
40s	26 cts.
50s	32 cts.
60s	40 cts.

Northern.—Chain Warp.

20s	18 cts.
26s	19½ cts.
30s	31 cts.
36s	25 cts.
40s	28 cts.
50s	34 cts.
60s	42 cts.

Southern.—Skein.

8s	12 cts.
12s	13 cts.
16s	13½ cts.
20½s	14 cts.
24½s	15 cts.
26½s	15 cts.
30s	17 cts.

Southern.—Chain Warp.

8s	12½ to 13 cts.
12s	13½ to 14 cts.
16s	14½ to 14½ cts.
20½s	14½ to 15 cts.
24½s	15½ to 16 cts.
26½s	15½ to 16½ cts.
30s	18 cts.

CARPET AND UPHOLSTERY YARNS.

8-3 and carpet yarn	12 cts.
9-3 "	12 cts.

Upholstery Yarns.

8-3 and 9-4 black	12 cts.
10-2 "	13½ cts.
16-3 "	13 cts.

Philadelphia Yarn Market.

Business has been somewhat more active on yarns the past month. Prices have fluctuated in narrow limits, but without scoring any average advance. Some stocks of hosiery yarns have been run off at lower prices than usual, but spinners hope the surplus stocks have

Continued on page 135.

KERR THREAD CO.
—SPINNERS OF—
Fine Combed Sea Island **COP SINGLES**
All Numbers, 30s to 150s.
Fall River, Mass.

J. D. KENNEDY, Lessee
North Athens Cotton Mills,
Manufacturer of
COTTON WARPS AND YARNS
in numbers from 4s to 14s.
ATHENS, - - TENN.

ABEGG & RUSCH,
WORSTED YARNS
Dry Spun, Nos. 36s to 100s.
COTTON YARNS
Nos. 12s to 120s.
92 GRAND ST., NEW YORK.

WOOLEN YARNS.
All grades Woolen, Mixed and Merino yarns.
15 SETS CARDS.
EDWARD M. ROCKWELL,
LEOMINSTER, - MASS.

A. HERBST. J. W. JONES.
HERBST & JONES,
Successors to Kershaw Worsted Co.
WORSTED YARN SPINNERS,
21st & Naudain Streets,
PHILADELPHIA.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

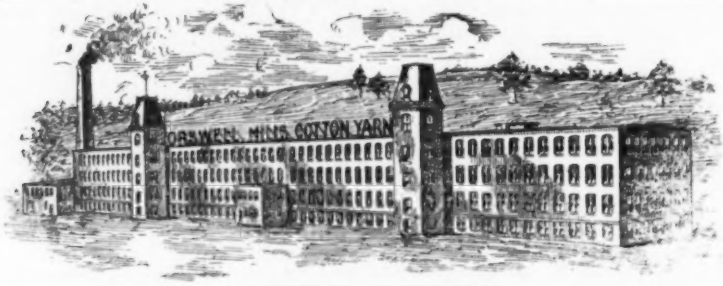
EICHMANN & STERNBERG
488-492 Broadway, NEW YORK.
COTTON WOOL SILK **YARNS** For Weaving Knitting or Embroidering.
HARNESS TWINES.

WOOLEN AND MERINO
YARNS. Special line for Bicycle and Golf Goods in all shades
For Hosiery, Gloves, Underwear, and all kinds Knit Goods. Cop, Cone and Skeins.
The J. & H. Clasgens Co.
New Richmond, O.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

YARNS

SOLIS - - BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

Cotton Yarns AND WARPS Of Every Description.

James F. White & Co.
COMMISSION MERCHANTS,
54 an 56 Worth St., NEW YORK.
228 Chestnut St., PHILADELPHIA.

BURLAPS all WIDTHS and WEIGHTS.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double and Twist, **COTTON WARPS**

HOUSATONIC, MASS. 4s to 60s.

Hosiery AND Weaving Yarn

ALBERT IVINS GROLL, BOSTON

THE WILMINGTON MILLS MFG. CO.

MANUFACTURERS OF **JUTE GOODS,**

CARPET FILLING AND RUG YARNS,

Wrapping, Baling, Tobacco, Hop and Wool Twines. Cords, Ropes, Packing and Specialties

WILMINGTON, DEL.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade. PAWTUCKET, R.I.

Continued from page 133.

been cleaned up so that business can be done on something nearer fairer prices. The following are as near as can be obtained although there is a difference of 1-2 to 1 cent per pound between first class yarns. We presume this is on account of low prices made on large stocks.

We quote:

WARPS.

20/1	13 cts.
22s	13 to 13¼ cts.
26s	13⅛ cts.
12/2	12½ to 13 cts.
14/2	13 to 13½ cts.
30/2 Eastern	18 to 18½ cts.
30/2 Southern	16½ to 17 cts.
30/1 Southern	14 to 15 cts.
30/1 Eastern	17½ to 18½ cts.
14s Southern	12½ cts.
16	12½ to 13 cts.

SKEINS.

26s soft	12½ to 13 cts.
20/1 "	12½ to 13 cts.
19s "	12½ to 13 cts.
4s to 10s soft	11½ to 12 cts.
10s to 12s hard	11½ to 12 cts.
12s soft	12 to 12½ cts.
14s "	12⅛ cts.
20/2	13⅛ cts.
16s soft	12⅛ cts.
14/2 hard	12 to 12½ cts.

SOUTHERN CONES.

6s to 8s	12 cts.
10s	12 to 12½ cts.
12s	12½ to 13 cts.
14s	13 cts.
16s	13 to 13⅛ cts.
20s	15 to 15½ cts.
24s	15½ to 16 cts.
26s	15½ to 16 cts.

SOUTHERN COPS.

6s to 8s	12 cts.
10s	12 to 12½ cts.
12	12½ cts.
16s	12½ to 13 cts.
10s to 12s shuttle	12 to 12½ cts.
6s to 8s shuttle	12 to 12½ cts.

MIXED COLORED CONES.

6s to 8s	14 cts.
10s	14 to 14½ cts.
12s	14½ to 15 cts.
14s	15½ to 16½ cts.

EASTERN COPS.

26s shuttle	13½ to 14 cts.
40s	17 to 18 cts.
12s	14 cts.

Continued on page 137.

B. F. BOYER & CO.,

Successors to GEORGE SHIMER & BOYER,

HOSIERY YARNS,
In Wool, Merino and Worsted.

GOLF YARNS,
In Wool and Worsted. Also carry a full line

BUNDLE YARNS
For the Jobbing Trade.

516 Market St., Philadelphia.
MILLS, CAMDEN, N. J.

PORTER BROTHERS & COMPANY

Commission Merchants,
Trimmings,
Buttons and
Knit Underwear.
Sole Agents for
John Paton, Son & Co.,
OF ALLOA, SCOTLAND.
Specialties:
SCOTCH MIXTURES
For Sweaters, Golf and Bicycle Hose, Mitts, Gloves, etc.
78 & 80 Worth St., New York.
72-82 Lincoln St., Boston.

BOTANY WORSTED MILLS,

PASSAIC, N. J.

Fine Worsted Yarns,

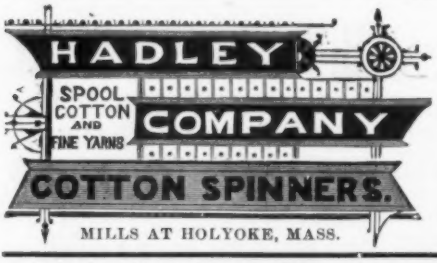
— AND —

Fine Woolen Yarns

— IN THE —

GREY, COLORS and MIXTURES.

IF YOU USE CUTS
HAVE THEM ELECTROTYPED BY
H. C. WHITCOMB & CO.
ELECTROTYPERS,
42 ARCH STREET,
BOSTON.



SPINNERS OF
FINE COTTON YARNS
30s TO 100s.
Gray, Bleached, or Colored. On cop, in skein on spools, cones or tubes.
Fine Cotton Warps, single and two-ply, in chain, etc.
Spool Cotton and Seaming Thread.
95 Milk St., BOSTON.

THE WILLIAM CLARK COMPANY,

WESTERLY, R. I.

Mills equipped with the latest and most improved machinery.
Combed Egyptian from No. 20s to 100s. Combed Sea Island from No. 40s to 200s.
Also 2, 3, 4, 5 ply and 6, 9 and 12 plv cable laid.
Hosiery Yarns on Cops Tubes or In Skeins, Grey, Bleached or Dyed. (Fast Colors.

The J. R. Montgomery Co.,

WINDSOR LOCKS, CONN.,

MANUFACTURE

LOOP OR BOUCLE YARNS, in Mohair and Worsteds.

COTTON SPIRAL OR LENO YARNS, to give leno effects with plain weave.

COTTON FLAKE OR KNOP YARNS for new effect in Cotton dress goods.

HIGH GRADE COTTON WARPS.

Also printers of Cotton, Wool or Silk Yarns.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

PLAIN AND FANCY PATTERN

Cotton Warps,

WHITE, MIXED AND COLORED.

For SATINETS, BLANKETS, ETC.

WHITTIER COTTON MILLS,

LOWELL, MASS.

SMALL BROS.,
Manufacturers of
Cotton **BANDING**
ALSO BRAIDS.
Fall River, - Mass.

Cohannet Mills,
TAUNTON, MASS.
Spinners of High Grade
HOSIERY YARNS OF EVERY DESCRIPTION.
Selling Agents JAMES E. MITCHELL & CO., Philadelphia and Boston.

Continued from page 135.

10s to 12s hosiery	13 to 13½ cts.
16s	13½ to 14 cts.
20s	15½ to 16½ cts.
24s	16 to 16½ cts.

SKEIN.

8/3 carpet	11½ cts.
8/3 slack	11½ to 12 cts.
9/4 slack	11½ to 12 cts.
10s double reeled	12 to 12½ cts.
16/3 slack	13 cts.
16/4 medium	13 cts.

Eastern skein, 1-2 c. above cops.

Eastern cones, 1-2 to 1 1-2 c. above cops.

Egyptian carded, 4 c. above white.

Combed, 4 c. above carded.

Wool spun yarns are being sampled on with more freedom although no large orders have been placed. The trade is still very slack on them. Spinners are working on short time.

We quote:

20s cut black cops	13 to 14 cts.
12 " " "	12½ cts.
16 " " "	12½ to 13 cts.
22s " " "	14½ cts.
26s " " "	17 to 17½ cts.
18s to 20s white	13½ to 14 cts.

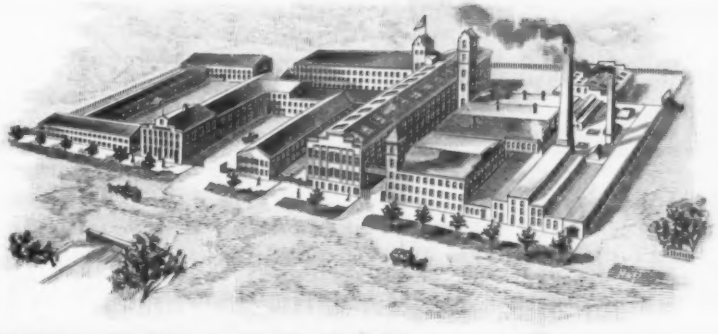
There is some inquiry for woolen yarns on account of the general excitement in the woolen trade although orders are placed very cautiously and only for sample lots.

—In "carbonising" woolen cloth with sulphuric acid, it is difficult to so thoroughly disintegrate the vegetable matter present, that it can hereafter be completely removed. The object of a recent French patent is to render more energetic the action of the carbonising acid by the introduction of small quantities of nitrite of soda, or nitrite of ammonia.

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

LARGEST IN THE WORLD. ESTABLISHED IN 1870.

THE F. MUHLHAUSER CO.



FINE SHODDIES, CAPACITY: 10,000,000 lbs. per Annum

Rings, Threads, Botany Yarns, Etc.

BRANCH OFFICES: 143 Federal Street, Boston. 7-9 Grand Street, Troy, N. Y. 34 No. Front Street, Philadelphia, Pa.

CLEVELAND, OHIO.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:
Broadway and Jefferson Avenue,
CAMDEN, NEW JERSEY.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.
Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

The Competition of Foreign Goods

On staple and plain fabrics under present tariff conditions makes it almost impossible to make any money, and the only hope of profit in making Dress Goods, Cloakings and Cassimeres seems to be in using

MOHAIR OR NOVELTY YARNS.

In the United States we are the only manufacturers from raw materials to finished product who make such yarns ONLY.
Perhaps we can be of use to you.

CRANSTON WORSTED MILLS, Bristol, R. I.

George Campbell & Co.

Worsted Spinners.

Yarns, both French System and Bradford.

Knitting Yarns in all Grades and Mixes.
All Numbers to 60s.

2IST STREET AND WASHINGTON AVENUE, PHILADELPHIA.

"Get Our Prices."

T. BROPHY'S SONS,

DYERS OF ALL KINDS OF YARN AND COTTON WARPS.

KENSINGTON DYE WORKS.

Jasper Street, above Clearfield Street,
PHILADELPHIA.

FAST FANCY COLORS.

We make a specialty of dyeing **Mode** and **Tan** shade on hosiery and yarns, as also all other fancy shades. **Colors absolutely fast.** For particulars address

OAKDALE DYE WORKS,
913 W. York St., Philadelphia, Pa.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silks for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479, and 481 Broome Street, NEW YORK.
79 Chauncey Street, BOSTON.
186 Franklin Street, CHICAGO

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

Boston Finishing Works

WILLIAMSTOWN, MASS.

BLEACHERS, DYERS AND FINISHERS

Of Pure Finish Shirtings, Sheetings, Canton Flannels and Filled Goods. Also Silesias, Satteens, Corset Jeans, Cambrics, Sleeve Linings, Pocketings, Flannelette, and all descriptions of Dyed Goods.

NAPPING A SPECIALTY.

Being equipped with the French and other Foreign and Domestic Napping Machines, we are prepared to give any kind of Nap required, including the French FlannelFinish.

HOME BLEACH AND DYE WORKS,

PETER B. McMANUS, Proprietor.

Dyers and Bleachers of Cotton Yarns,

PAWTUCKET, R. I.

Pawtucket Dyeing & Bleaching Co.,

BLEACHERS AND DYERS OF

COTTON YARNS AND STOCKINET.

OFFICE WITH BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,
28 BAYLEY ST., PAWTUCKET, R. I.

ESTABLISHED 1869.
JAMES BOWER'S SONS, Ltd.
Manufacturers of
ALL GRADES AND COLORS OF
Wool Shoddies and Worsted Waste,
CHESTER, PA.
Capacity One Million pounds per year.

CARBONIZER removes burrs perfectly and leaves **Wool** white and soft
Also Bi Sulphite of Soda, Alum and Acid
Manufactured by the
MERRIMAC CHEMICAL CO.,
13 Pearl Street, Boston.
Works at So. Wilmington, Mass., B. & M. RR., Southern Division.

M. B. SCHWAB, Pres. D. W. SCHWAB, Sec.
H. RAWITSER, Treas. ED. GLUECK, Gen. Mgr.
Riverdale Woolen Co.,
MANUFACTURERS OF
SHODDIES
OF EVERY DESCRIPTION.
Capacity 7,000,000 pounds per annum.
Custom Carbonizing and Garnetting a Specialty.
RIVERDALE, NORTHBRIDGE, - MASS.
New York Office: 140 Duane Street.

RICHARD T. SULLIVAN,
WOOL EXTRACTS,
And Fine All Wool Shoddies.
NEWTON LOWER FALLS, Mass.
And 155 Federal Street, Boston, Mass.

John H. Lyon & Co.,
IMPORTERS AND DEALERS IN
Woolen Rags, Waste, Wool and Hair.
All Grades of Paper Stock Bought.
10 & 12 READE ST., NEW YORK.

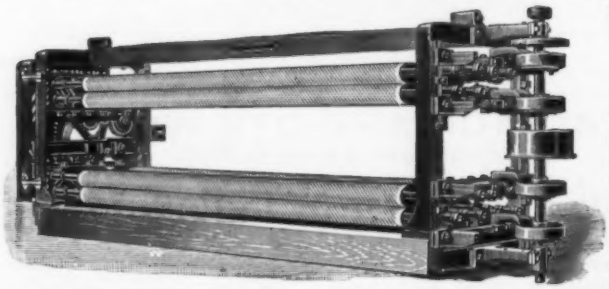
THE GARFIELD WOOLEN CO.
MANUFACTURERS
Fine Wool Shoddies and Extracts,
in all grades and colors.
Carding, Picking, Carbonizing and Garnetting done for the trade.
GARFIELD, N. J.

CHAS. J. WEBB & CO.,
Foreign and Domestic
WOOL, HAIR and NOILS,
142, 144 & 152 to 156 N. Front St.,
PHILADELPHIA PA.

JAMES E. DALY
Manufacturer of
WOOL EXTRACTS and SHODDIES,
P. O. Box 395,
Paterson, N. J.
Fancy Colors a Specialty. Long Distance Telephone.

FOWLES & CO.,
Importers and Dealers
WOOLS, NOILS, HAIR,
Shoddies, Waste, Flocks, Etc.
106 Church St., Philadelphia.

BARKER'S Patent Double-Apron Rubbing Motions for Condenser Cards.



WHY they are a Glittering Success:

1st.—More Rubbing Surface than any other make.
2d.—Turn off more Slubbing than any other make.
3d.—Slubbing being better Rubbed is much Rounder and Sounder.
4th.—Being Rounder, Closer and Sounder, it spins better.
No ends to run up on the mule. Less waste made. The spools hold more stock. Less Creeling to be done.
General Result.—Superior Yarn and net gain of 10 to 40 per cent. more work or yarn made from the same number of spindles over any other way of Condensing.

JAMES BARKER, Second and Somerset Sts., Philadelphia, Pa.

SAVOGRAN CLEANS WOOL, FLOORS, ANYTHING.
INDIA ALKALI WORKS, Boston.

FAST COLORS

For Wool, Woolen and Cotton Yarn and Piece Goods Dyeing, and for Calico Printing

ALIZARINE RED, PASTE AND POWDER.

Alizarine Blues, Oranges, Browns, Yellows, Maroon, Gray and Black.
Cœruleine, Galleine, Mythylene Grays.
Thionine Blues, Thionine Indigo, Solid Green and
PATENT BLUES (superseding Extracts of Indigo on account of fastness and color bloom) for Wool and Silk, Benzidine and Primuline Colors, Zinc Dust, Aniline Salts and Oil.

VICTOR KOECHL & CO. 79 MURRAY ST. NEW YORK.

SOLE AGENTS FOR

FARBWERKE, formerly MEISTER, LUCIUS & BRUENING, HOECHST o | M.; A. LEONHARDT & CO., Muehlheim o | M.

BRANCH OFFICES:

Boston, Mass., 138 Milk St.; Philadelphia, Pa., 39 N. Front St.; Providence, 45 S. Main St.

PROVIDENCE DYE WORKS.

Dyers and Finishers,

COTTON YARNS, Suited for HOSIERY and WEAVING Cotton, Woolen and Worsted DRESS GOODS, Woolen and Worsted Mixed CASSIMERES and CLOAKINGS, also Woolen and Worsted Slubbing, COTTON YARN and WARP DYERS and BLEACHERS.

FIRTH & FOSTER CO.,

OFFICES: **Philadelphia, 546 Bourse Building.**
New York Office, Silk Exchange, Broadway and Broome St.
WORKS: **Taylor, Emerald and Adams St., Kensington, Philadelphia, Pa.**

R. GREENWOOD & BAULT,

GLOBE DYE AND BLEACH WORKS,

FRANKFORD, - PHILADELPHIA.

Specialists in Cotton Warps and Skein Dyeing.

BAY STATE DYEING AND FINISHING CO.,

Yarn and Piece Dyeing a Specialty.

NORTH ANDOVER, DEPOT, - - MASS.

JOHN J. KELLER & CO.,

104 and 106 MURRAY STREET,
NEW YORK.

220 Church St., Philadelphia. 153 Milk St., Boston.

Aniline Colors, Dyewood Extracts, Sumac and Nutgall Extracts.

FAST COLORS for wool dyeing, one dip cotton colors, novelties and specialties for calico printing.

—— MANUFACTURED BY ——

JOHN R. GEIGY & CO., Basle, Switzerland.

WM. J. MATHESON & CO., Ltd.

IMPORTERS AND
MANUFACTURERS OF

DYE STUFFS

New York,
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Philadelphia,
Providence,
Charlotte, N. C.,
Montreal, Canada.

FARBENFABRIKEN OF ELBERFELD CO.

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Aniline Colors, Alizarine, Dyestuffs.

SOLE IMPORTERS OF THE WELL KNOWN ALIZARINE AND DIRECT DYEING BENZIDINE COLORS,

—— MANUFACTURED BY ——

FARBENFABRIKEN, formerly FRIEDR. BAYER & COMPANY, Elberfeld and Barmen, Germany.

Sole Agents of the Hudson River Aniline Color Works, Albany, N. Y

THE STAMFORD MANUFACTURING CO.

MANUFACTURERS OF

CUT and GROUND DYEWOODS,

Dyewood Extracts and Liquors,

FLAVINES.

Importers of CHEMICALS and DYESTUFFS.

133-137 Front Street, - New York.

NEW COLORS FOR COTTON

OF THE

St. Denis Dyestuff and Chemical Co., Paris, France.

VIDAL BLACK for Dyeing. VIDAL BLACK S for Printing.
THIO-CATECHINE for Dyeing. THIO-CATECHINE S for Printing.
CACHOU DE LAVAL for Dyeing. CACHOU DE LAVAL S for Printing.
Fast to Light, Soap, Alkali and Acid.

MADRAS BLUE. Dyeing on Sumac and Antimony Mordant. The only perfect Indigo Blue on the market. It dissolves readily, dyes evenly and IS FAST.

Send for product and dyed samples, processes, etc., to

SYKES & STREET,

New York. Boston. Philadelphia.

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IMPORTERS OF

INDIGO, CUTCH, GAMBIER, SICILY SUMAC, ANILINES, ETC.

AND DEALERS IN

Dyestuffs, Extracts and Chemicals.

No. 70 Kilby Street, BOSTON.

No. 8 and 10 Letitia Street, PHILADELPHIA.

New York and Boston Dyewood Company,

—— MANUFACTURERS OF ——

DYEWOOD EXTRACTS.

Sole Agents for the United States and Canada for

ACTIEN-GESELLSCHAFT FUR ANILIN-FABRIKATION, BERLIN.

Specialties for Wool, Silk and Cotton.

CHROMANIL BROWNS.

New direct dyeing colors of unusual brilliancy and strength, producing fast cutch shades by treatment with Chrome and Bluestone.

NEW YORK: 55 BEEKMAN ST. PHILADELPHIA: 124 ARCH ST.
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A. KLIPSTEIN & COMPANY,

122 PEARL ST., NEW YORK.

Chemicals and Dyestuffs,

ANILINE COLORS.
FAST COLORS FOR WOOL.

BRANCHES:

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283-285 Congress Street, Boston, Mass.
124 Michigan Street, Chicago, Ill.

American Aniline Colors FOR Cotton, Wool and Silk.

THE HANNA-SCHOELLKOPF CO., Philadelphia.

New York. Established 1865. Philadelphia.

ANCHOR COLOR MANUFACTURING CO.,

HAVANA COLORS FOR COTTON.

ALIZARINE AND MAZARINE COLORS for Wool, Yarn and Piece-Goods.

One-Dip Blacks and One-Dip Blues for Mixed Goods.

Lactic Acid, Alizarine Mordant, Archil Liquor, Cudbear, Extract Indigo, Indigotine'

ACID BLACKS.

462, 464, 466 Cherry Street, New York.
PHILADELPHIA Office: 109 N. Front Street.

C. BISCHOFF & CO.,

87 and 89 Park Place, New York. Branches, 110 Walnut St., Phila. 104 Broad St., Boston.

Aniline and Alizarine Colors, Dyestuffs, Chemicals,

ANILINE OILS AND SALTS.

LATEST SPECIALTIES.

Cresylblue, OB pat'd. } For Cotton: absolutely fast to Sunlight.
" BB "
" RR "
Cresylviolet "

Thio Versuvine, BB. } One dip for cotton and mixed goods, wool and cotton silk and cotton.
" Brown, BB.
" Yellow, R.
" Orange, G.

Naphtazine Blue (Pat.)—a fast acid Navy Blue for Wool.

FAST DIRECT BLUES, Pat'd. for Cotton and Mixed Goods. Wool and Cotton, Silk and Cotton.

FAST DIAZOTABLE BLACKS, PAT'D.

Established 1834. H. G. JOHNSON, Proprietor.

Wm. G. Johnson Co.

Manufacturers of

DYEWOODS

Logwood Extracts, - - -
Ground and Bolted Camwoods
And other Fancy Woods. -

All Goods Warranted Uniform.

Long Distance Telephone. **UNCASVILLE, CONN.**

Fuller's Earth without Grit,

IMPORTED SOLELY BY

A. de RONDE & CO.,

254 FRONT STREET, NEW YORK.

Woolens washed with Patent Refined Fuller's Earth are much more durable and handle much softer than those cleansed by soaps and other means.

For practical proof of these facts address as above, or

H. N. GARRETT, A. M., INST. C. E.,
101 Sydney Place, . . . Bath, England.
Proprietor of the Midford Fuller's Earth Refining Works.

NASHOBA COMPANY, AYER, MASS.

MANUFACTURERS OF

TRADE— **FANKHAUSINE.** —MARK

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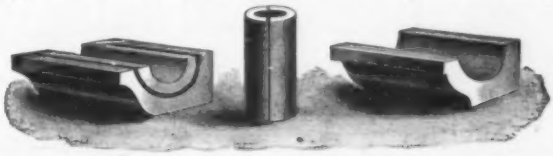

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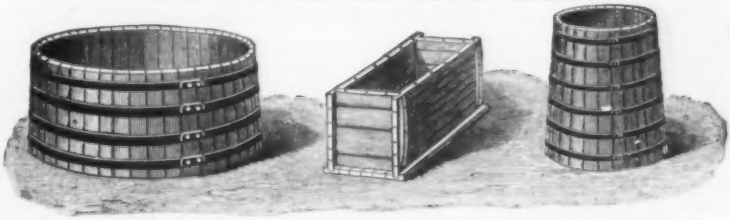

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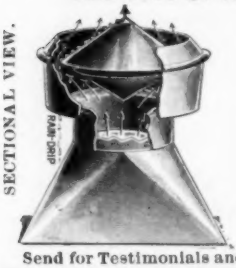

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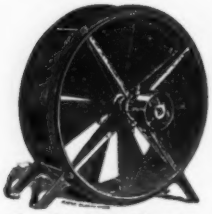

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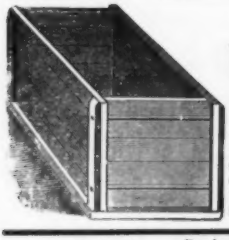

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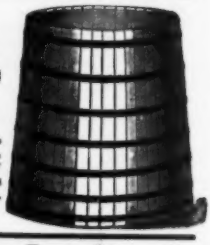

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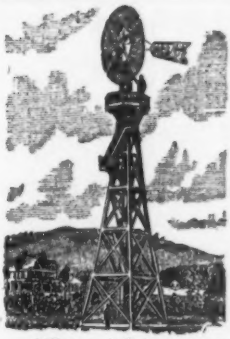

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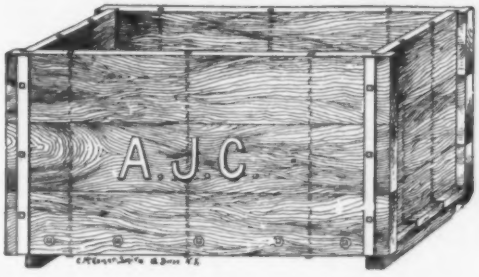

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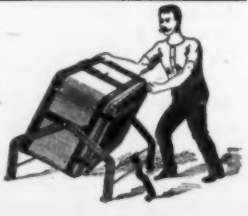

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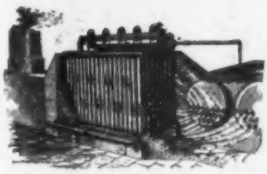

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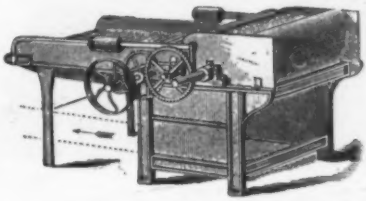

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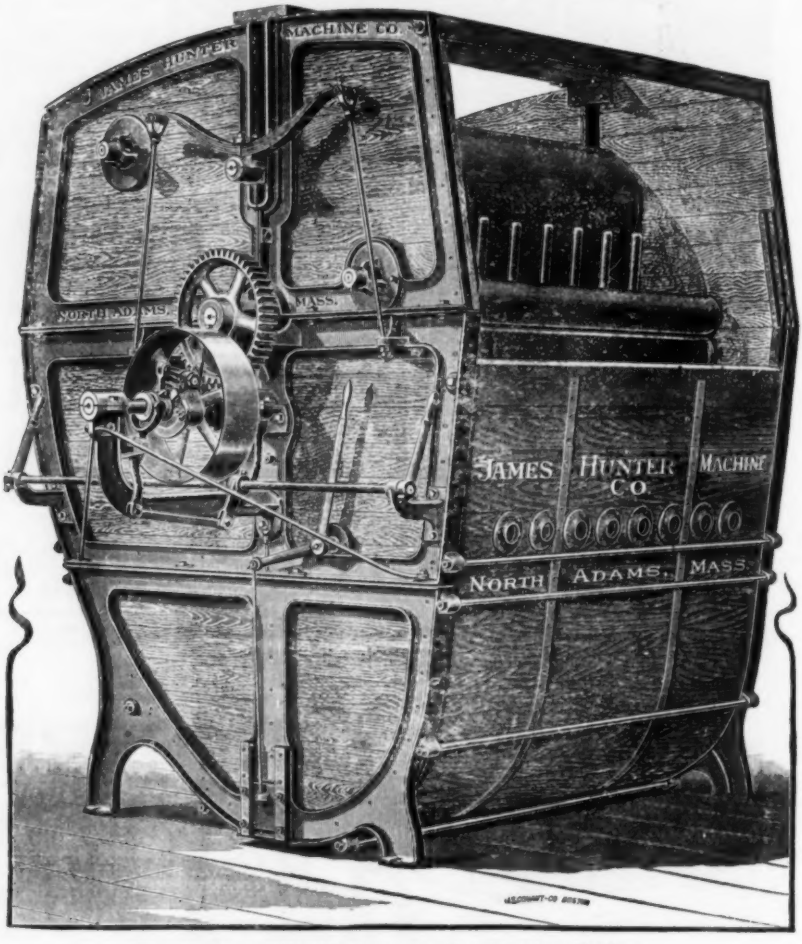

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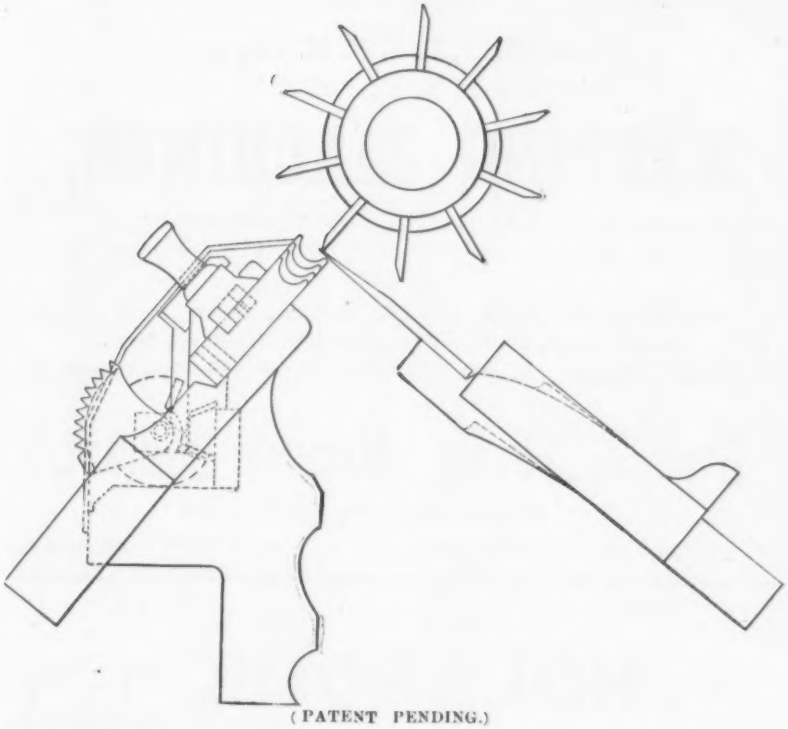

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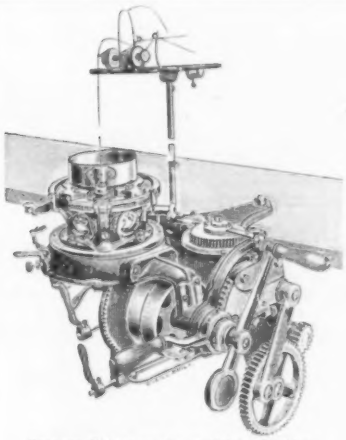

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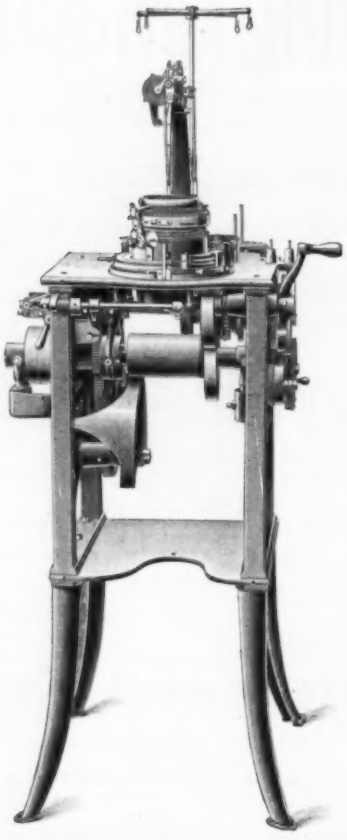

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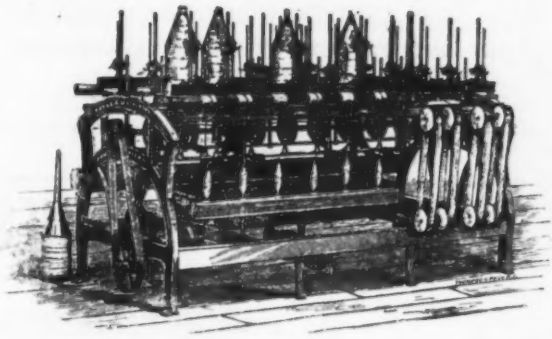

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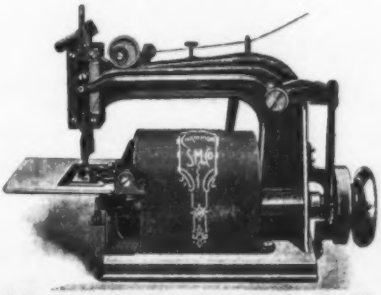

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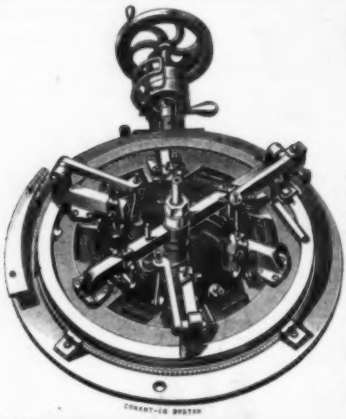

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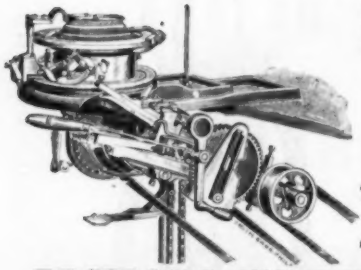

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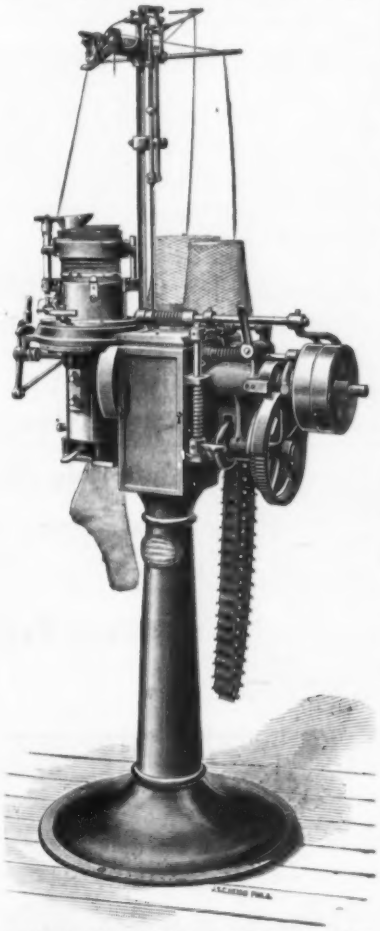

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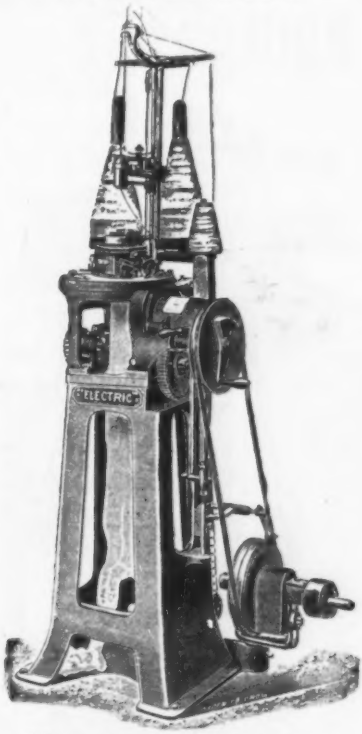

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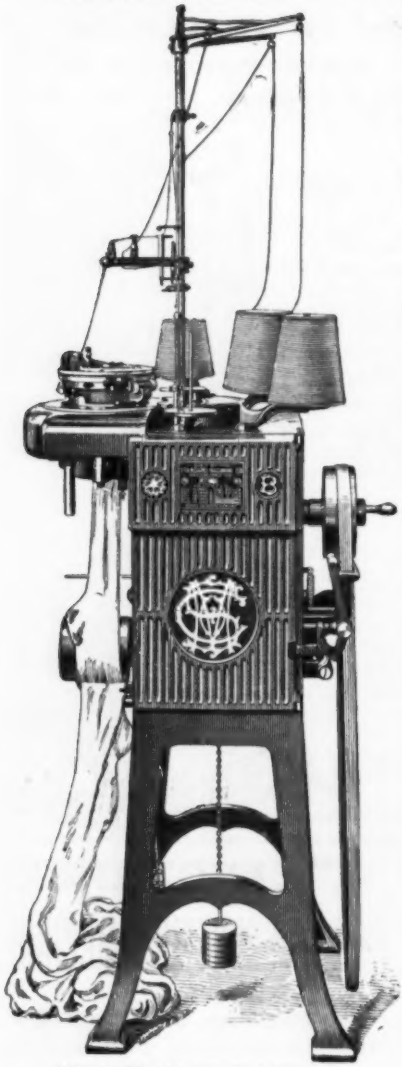

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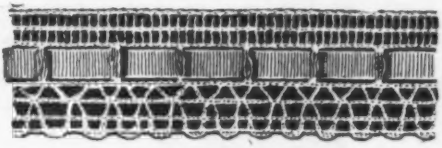
Lace  **Edgings**

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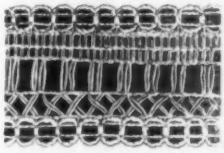

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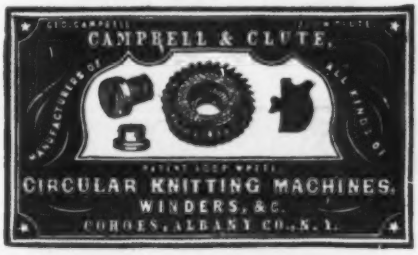

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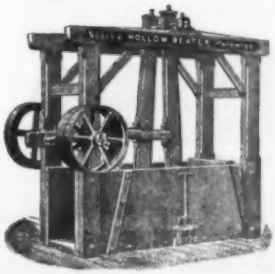

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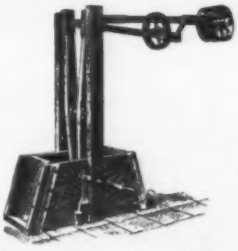

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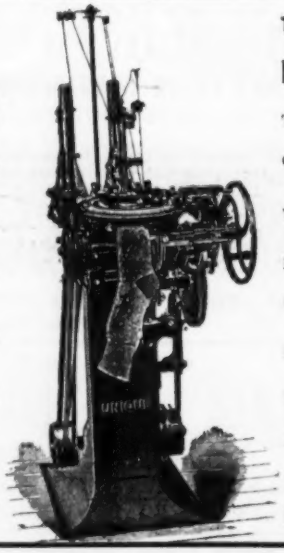

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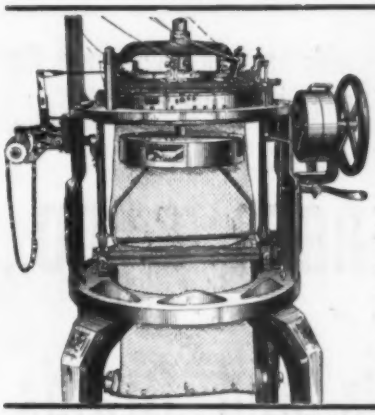

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U. S. Circuit Court of Appeals. Second Circuit.
Adelbert L. Traver, Appellee, vs. Eugene H. Brown, Appellant.

"WALLACE, CIRCUIT JUDGE." "We are unable to doubt that the machines of the appellant do not infringe the claims in controversy.

"Accordingly the decree of the Circuit Court should be reversed, with costs against the appellee, (Traver) and the cause remanded to the Circuit Court, with instructions to dismiss the bill, with costs of that court." 70 Fed. Rep. 810.

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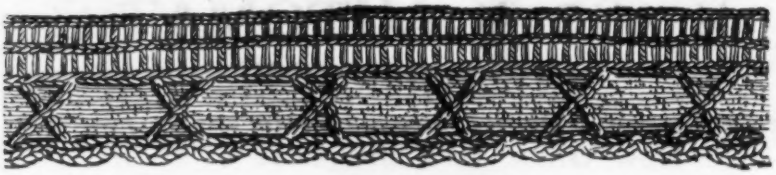

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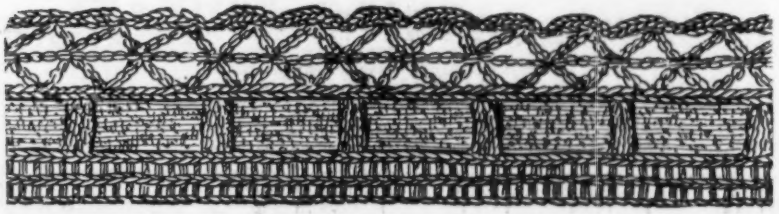

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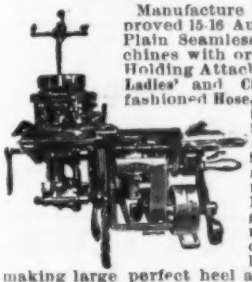

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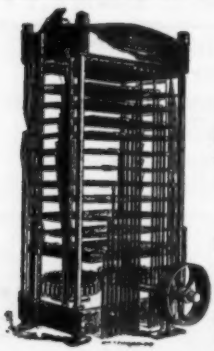

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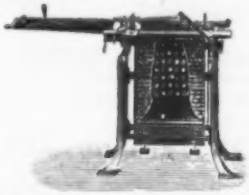

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Besides the complete information concerning the mills outlined above, this directory will also contain carefully prepared lists of:

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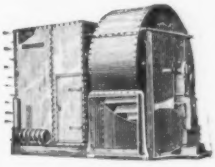

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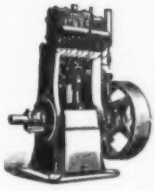

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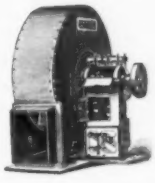

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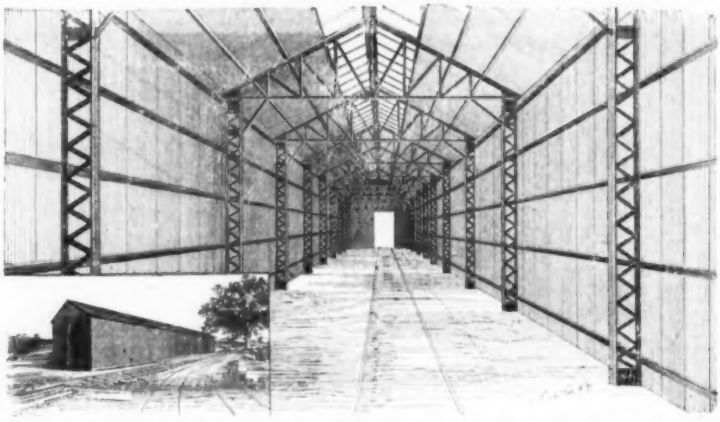

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